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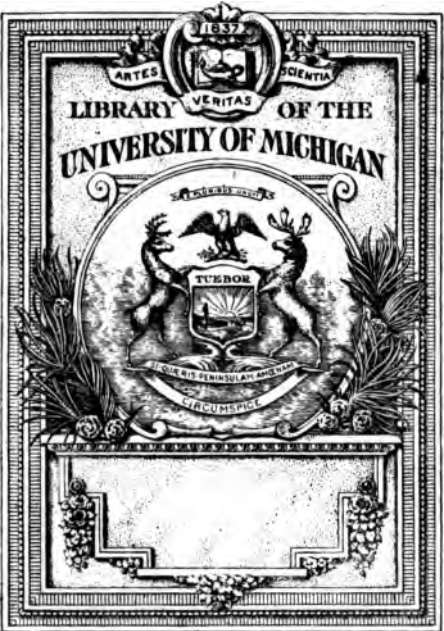
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# THE STATE OF PARÁ



## NOTES FOR THE EXPOSITION OF CHICAGO

AS AUTHORIZED BY

THE GOVERNOR OF PARÁ, BRAZIL,  
DR. LAURO SODRÉ

*Para, Brazil (State)*

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NEW YORK

1893



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**PART I.**  
**HISTORY OF PARÁ.**







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## HISTORY OF PARÁ

FROM ITS FOUNDATION, IN 1816, TO THE PRESENT DAY.

ORELLANA, a Spanish adventurer, who had followed Gonzalo Pizarro in his expedition to the *country of cinnamon*, abandoned his companions, and came down, it is supposed, about the year 1560, by the river Napo, to the Amazon.

His report of the "sea-river" was little less than fabulous. He had seen there, he said, a nation of fighting-women—the *Amazons*,—from whom, indeed, is derived the name of the river.

To him may be attributed the legend of that lake called in the Spanish tongue *El Dorado*, the sands and margins of which were laminated with gold, and whose site for more than a century was sought after by adventurers of many nations.

The lands of Brazil last colonized by the Portuguese were those of the north, whence sprung forth the states of Maranham, Pará, and Amazon.

French, English, and Hollander had preceded them, establishing barracks on the margins of the great river.

Since the year 1600 the ambitious merchants of Flessinga (Holland), in successive expeditions, endeavored to establish plantations on the Amazon, and on one of the branches of the great river built up the forts of *Orange* and *Nassau*. The English and French had other fortifications which were taken and demolished by the Portuguese.

Sir Walter Raleigh, an English navigator, in a voyage to the Orinoco in 1595, imparted the news that the French, under the pretext of looking for gold, were exploring these lands.

Of all those forgotten explorers, only the name of M. de

*La Ravardière* remains indelibly associated with the discovery of Pará.

In 1605 he returned from his first expedition to the Guyana, to Europe, and in 1612 he left France for the third time, and under the protection of his queen started for Maranhão;—that state being already colonized by Frenchmen. The following year he left for Pará, accompanied by soldiers and Indians, with the view of taking absolute possession of that region for his sovereign.

The Portuguese, however, endeavored to conquer what in reality belonged to them by right of treaty.

Alexander de Moura, after taking Maranhão in 1614 from the French, and imprisoning Ravardière, immediately sent Francisco Caldeira Castello Branco as commander-in-chief to attempt the conquest of the lands of Pará.

Castello Branco, with three caravels, or light ships, started from Maranhão on the 25th of November, 1615, and in the beginning of the following year he laid the foundations of the city of *Belém* or *Pará*, the capital of the state.

Pará was then inhabited by several tribes of Indians, altogether numbering thousands, who fought bloodthirsty battles with one another.

The *Nheengahibas*, an industrious and valorous Indian tribe, ruled over the island of Marajó. Their drawings of *igaçabas* (large jars) remain to this day, calling up traces of that ancient people which numbered 40,000 souls.

Little of importance can be recorded in those early years of colonization; they passed between depositions of governors and intrigues of colonists and missionaries and the metropolitan government.

Castello Branco himself was deposed, imprisoned, and sent to Lisbon.

From the men who succeeded him unworthily in the government can be detached only the sympathetic figure of Pedro Teixeira, who in 1637 was the chief of the Portuguese expedition that ascended the Amazon to Quito; who buried on the margins of the Napo the landmarks that limited the Portuguese possessions of Brazil.

From this voyage, which lasted two years, the first scientific notes of the great river and a geographical map of the region were sent to Europe.

In 1640 Pedro Teixeira took charge of the government, which position he retained a little over a year.

At this time the enslavement of Indians, called *ransom*, was commenced in Amazonian lands.

The Jesuits, heralds of the dawn of civilization, in the beginning were apologists of slavery, but in the end apostles of abolitionism!

Father Antonio Vieira was himself the principal preacher in this crusade.

Fortunately the determination of the pontific bull (of December 20, 1741), through a decree countersigned by the Marquis de Pombal, announcing the freedom of the Indians and their rights to the honors, privileges, and liberties of other Portuguese subjects, was put into execution.

Until 1641 Pará was under the government of Maranham, and the administration of a governor; but Pedro Maciel having been appointed that year independent governor, it became an independent province. To this may be attributed its conquest in the following year, and almost without effort on the part of the Hollanders, who, however, within one year's time voluntarily abandoned it.

Pará went back again to the dependence of Maranham, under which it remained until 1652, when the metropolis appointed as its first governor Ignacio do Rego Barreto, a man of advanced ideas.

In 1649 the General Commercial Company of Brazil was organized in Portugal. It became extinct in 1720, in the north, at the time of its greatest prosperity. It held the monopoly of commerce on condition of the transportation of the authorities to Brazil, and the defence of the territory against foreign invasion, and for this purpose it possessed a navy of thirty-one ships, armed and equipped at its own expense.

This company, to whom the country is indebted for very little in the way of improvement, committed abuses that

created general antipathy, and gave rise to insurrections, of which the most serious was the one known as the *Beckman insurrection*, in 1681. The people of the interior were at that time instructed by Catholic missionaries.

Among the most notable of those laboring in the High Tapajós was the Father *Antonio de Villela*, but at the same time the high Tocantins was made the inroad of the explorers, known by the name of *bandeiristas* (flag-men), who were in search of gold.

The French at that time were eager to conquer the left margin of the mouth of the Amazon, which they really did, seizing Macapá in 1691, under the command of the governor of Cayenne, the MARQUIS OF FERROL; thence being expelled within a few months by the Portuguese captain, FUNDÃO.

Towards the end of the seventeenth century, *municipalism* in Pará at last awakened into life, protecting the north against the Dutch invasion, and even reaching the point of forming its government.

Pará elected two deputies to represent her at Maranham.

As soon as they comprehended that this state intended to absorb all the activity of the new captaincy (the ancient division of Brazil), they refused in spite of all threats to go.

With the beginning of the seventeenth century, the Society of Pará (*sociedade paraense*) commenced its real formation: dissensions ceased, administration became stable, and law more firmly established; nearly all villages and cities of the captaincy, or province, were founded, and towards the end of the seventeenth century it formed with Maranham a single government.

The treaty which determined the limits of Brazil in Pará, with the neighboring possessions being signed, all fears of foreign invasion came to an end, and the productions of the state increased.

Cacao, vanilla, and indigo were gathered; coffee was planted: Pará became the first market of Brazil, and the number of voyages to Portugal also increased.

In 1702 cattle raising was commenced in the island of

Marajó, in which labor the Friars of Mercy took the greatest share, establishing immense farms, which afterwards passed to the country's domains, and at present belong to the state.

In twenty years after this organization Pará had a sufficient quantity of cattle for consumption, and in fifty years there were in Marajó over forty thousand head of cattle.

The militia of the state at that time was also organized, and several native corps were formed.

Metal coin was then brought into circulation; for up to this time clews of cotton were used, and in some parts cacao fruits, for commercial exchange or barter.

The mouth of the capital's port and several points at the frontier were fortified, and in 1721, the state custom-house department, and the Board of Public Health were organized.

Thus was the administration of the governor, BERNARDO PEREIRA BERREDO, made a distinguished one; he also wrote a book entitled *Historical Annals of Maranhão*, to which Pará was then annexed, and another on the *Chronology of Pará*.

In 1723 the Catholic bishopric of the state was created, whose religion rendered all important services, especially towards the Indians. The Jesuits invented a *general language* to be taught to all tribes, and one of them, Father Malagrida, founded in 1745 the seminary of Pará, where a large portion of the youth of Pará have been instructed.

Three years later, in 1748, the foundation of the famous cathedral of Belém was laid, which, since its completion (a work in great part due to the zeal and devotion of the late revered Bishop MACEDO COSTA), has become the most sumptuous Catholic temple of all Brazil.

The Company of Jesus ultimately pushed on the administrative intrigues, placed obstacles in the way of the delineation of the frontiers, delayed and embarrassed the royal decisions, and gave rise to their own annihilation in the state.

In 1741 the great scientist LA CONDAMINE arrived in Pará, on his return from a commission on which he was sent with several other French and Spanish astronomers, for the



purpose of organizing geodesic observations in order to determine the real form of the earth.

This *savant* made scientific analyses and wrote important scientific works concerning the region, giving information to European countries of its principal natural products, amongst which ranks *rubber*, which up to that date was unknown.

Gaspar de Lima discovered *quinine* in the country, and explorations for gold were made in the Tapajós River ; João de Azevedo came down from Matto-Grosso, and verified the fact that a communication through that river with the state was possible.

It is only now, however, that studies have been made for the laying of a railroad in that direction.

MENDONÇA FURTADO in 1751 took charge of the government of Pará. He was the Marquis de Pombal's brother, who was then minister of the kingdom. His administration was a very successful one. He extended means of instruction to the natives and organized judiciary power. He attempted in Pará the system of military colonization, sending to Europe for regiments of soldiers, the greatest part of whom were agriculturists, and to whom he gave lands for cultivation, as well as to the Indians, whom they taught, paying them wages.

The military colonies of *Araguaya* and *Araguary* date from that time.

As importation increased, the *General Commercial Company of Maranhão* was established, which, while it brought about some improvements, unfortunately introduced slavery into Pará, bringing hither some 3,000 African slaves.

Agriculture became paralyzed, causing the Portuguese colonists to throw all their energies into commerce, a fact to be deplored to the present day !

This company was closed in 1778.

By this time the monumental palace of the government, the first of Brazil, designed by the engineer Lande, was constructed.

The marshes that covered a great part of the capital were drained, through plans of the engineer Gronfeliz. He

opened canals and ditches, through which the marshy waters were turned into the rivers *Guamá*, *Guajará*, and *Reducto* creek.

After this the first industrial establishments of the state were founded; and, in 1767 the state of Amazon was separated from that of Pará, forming an independent captaincy, which, through the independence of Brazil, constituted, with all her territory, until within a few years, a single province.

In 1761 a stock for large naval constructions was built, the origin of the actual navy-yard, in which can now be found all necessary improvements.

Since its foundations, many men-of-war and gunboats—and recently the gunboat *Mandos*—have been constructed.

In the same year, in the Cathedral Square, the Military Hospital was also founded, there is also situated the Arsenal of War, close to the place, where, later on, Bishop FRIAR CAETANO BRANDÃO erected the Holy House of Mercy, whose Catholic brotherhood is now secularized, and is constructing under the plan of the engineer Nina Ribeiro a spacious hospital in Santa Luzia Square.

The eighteenth century closed with a series of boundary works by Spanish and Portuguese commissioners, who determined the Peruvian frontiers, elucidating, at the same time, the treaty of 1777, by which the Portuguese crown was despoiled of a great part of its territory, and that treaty of *Utrecht*, in which the Oyapock was marked as the limit of Brazil with the Guyanas. Of these studies and explorations works were published, the most reliable of which is the *Chorography* of the engineer Brann.

The first census was taken in 1800. The total population of the province was then 80,000 inhabitants, of which 12,000 belonged to the capital. In 1864 the population of Pará was 300,000, and of its capital 32,000; to-day the state has a population of 500,000 and its capital 70,000.

The estates of the Friars of Mercy and of the Jesuits have been secularized, some having been appropriated for pious institutions, and others for public buildings.

The means of public instruction have been enlarged; an

agricultural school, comprising practical instruction, was afterwards projected, which under the present administration of GOVERNOR SODRÉ is to be realized.

There was also a *Military School*, including in its course two years of mathematical instruction.

With the removal of the court of D. John VI. to Brazil, everything improved.

Pará was elevated to the rank of a province of the United Kingdom of Portugal, Brazil, and Algarves; taxes were regulated, dwelling-taxes collected, and the number of public functionaries was increased.

To revenge Bonaparte's invasion of Portugal, the king, in 1808, ordered a division of soldiers from Pará to take possession of Cayenne, which they accordingly did with much distinction and bravery, only delivering it up again in 1817.

As a remuneration for this service, the first concession of lands was granted to the province.

The custom-house department was reformed, and commerce with foreign nations was enlarged.

From this progress arose the first impulse of independence.

At first Pará feared its subjection to the central government, thence the insurrection of 1821, in favor of the Portuguese charter, which had as its victory the acclamation of a governmental Junta. A deputation was sent to swear, in the name of the people, fidelity to the king.

Of this Junta the student Felipe Patroni was a member. He was a heedless agitator, and almost immediately himself turned against that same metropolitan government, and ended by becoming an aimless republican.

He published the first daily paper in the city, and gave it the name of *O Paraense*, from which sprung the first germs of Pará republicanism.

— Brazil had already, since 1822, become independent of Portugal, when, on March 1, 1823, the adherents to Portugal reattempted a revolution, which failed, and those implicated therein were deported to Europe.

CANON BAPTISTA CAMPOS, another popular agitator, figured as the chief of the national party.

At last, on the 16th of August, 1823, intimidated by the presence of a man-of-war, commanded by John Greenfell, the governmental Junta acclaimed in 1821 capitulated, and accepted the independence of Brazil and the government of D. Pedro I.

The retrogrades continued to hold official positions, which exasperated the patriots of independence and caused continual insurrections, of which the most tragic was that of October 16th of the same year: 256 prisoners were forced into the hold of the ship *Palhaço*, and met their death there by asphyxiation.

There was a general indignation and outcry that spread to the interior and kindled into life the republican spirit, which was propagated by the only press of the state.

The 1st of May, 1824, had already been marked for the outbreak of a revolution that should annex Pará to the northern provinces, forming the celebrated *Confederation of the Equator*, when, the day before, arrived the first president appointed by the imperial charter, Dr. José de Araujo Roso.

The government of Rio, to satisfy those ideas of self-government manifested in Pará, gave to the first presidents the greatest possible executive powers, which were restricted in proportion as the province developed, until the Republic, in 1889, brought them to a greater perfection.

Roso gave himself over to the same coterie that governed, and his adversaries, without resource or hope, created themselves demagogues.

There were revolts in several parts of the interior, and while the authorities proceeded from one abuse to another, anarchy invaded all spirits, and, aided by religious fanaticism, burst forth, in 1835, into the revolution of the *Cabanagem*, that filled with bloodshed and horror the entire province, marking an epoch of terror. At the head of this revolution were Edward Angelim and the two Vinagres (Antonio and Francisco), who declared themselves presidents.

The anarchists began by assassinating the legal authorities, and finished by killing Malcher, the first chosen chief.

Marshal Manoel Jorge, appointed by the government of Rio to take charge of the province, had the cowardice to allow himself to be deposed. Fire, robbery, and savagery invaded cities and villages, a few of which escaped, the most important of them being Cametá, which, under the administration of Father Prudencio, had made itself the centre of authority.

It fell to the share of GENERAL ANDRÉA to take, on the 13th of May, 1836, Belém from the anarchists, and to pacify the province.

The press that had hitherto provoked animosity became the apostle of law and order, and to it we owe a great part of the progress of the province.

Pará had then two daily newspapers; at present it has over fifteen.

Peace and prosperity commenced for the province, and its income steadily increased.

In 1838 this income amounted to 231 contos of reis; in 1888 to 3,205; and at present it has reached over 7,000 contos of reis.

In these figures are included the state only, independent of the municipal and general income.

Industrial and agricultural establishments rapidly increased.

Some time after, all those establishments were abandoned and the people began almost exclusively to employ themselves in gathering the natural products, such as rubber, cacao, tonka-beans, etc., which gave them better results.

In proportion to the increase of commerce there was a decrease of national ships to transport the products of the Amazon; for this reason the government opened, in 1867, the Amazon River to ships of all nations.

Then the exploration of the great river was opened to the world, and Pará advanced rapidly, while its income largely increased.

In 1852 steam navigation had already commenced on the Amazon, and it has given results never before seen in other fluvial countries. JOÃO AUGUSTO CORRÊA, a Pará merchant,

obtained for the province traffic of the United States, and he was the first proponent of steam navigation for the Amazon.

In 1865 Brazil declared war against the government of Paraguay. In Pará were organized volunteer regiments of patriots, who marched to the defence of their country. To glorify these martyrs the province erected a statue, in Palace Square, to the brave General Gurjão, who fell mortally wounded in the battle of Itororó. Owing to the pacific character of the Paraenses, the province now entered into a long period of peace and prosperity. Men like Angelo Custodio, Jeronymo Coelho, the Marquis of Santa Cruz, and Viscount of Souza Franco came. To this period we owe many institutions and public buildings, viz.: the Jury, the Supreme Court, Lyceum, Amparo College, Normal School, Boys' Institute, Theatre of Peace,—the finest in Brazil, the Museum, the Municipal Palace. During this time many streets were opened and some of them paved with *parallelo-pipedons* of granite.

In the midst of so much development, public spirit ever strove towards higher ideals.

The abolition of slavery was urged in clubs, and by the press; kermesses were held, and abnegations practised; and Pará had the glory of marking the 13th of May, 1888 (the anniversary of the return of Legality, in 1836), for the complete abolition of slavery in the country.

Even at that time the idea of republicanism commenced to spread.

Some of the young men, who appeared to have lost all faith in men and militant parties, commenced ostensibly to organize conferences and meetings, publishing a daily newspaper called *The Republic*.

Other papers accepted with sympathy the *propaganda*, which went so far as to penetrate the abodes of old politicians.

In vain Count d'Eu, in a voyage up the Amazon in the beginning of 1889, searched for adherents to the throne; republican ideas were arousing public spirit to greater intelligence and activity.

On the 15th of November, 1889, the Republic was formally

proclaimed in Rio de Janeiro, and the proclamation was accepted in Pará.

A governmental Junta was proclaimed, and Pará declared a federal state. This governmental Junta was composed of Dr. Justo Chermont, Col. Bento Fernandes, and Commander Nascimento.

Dr. Chermont was appointed governor in December, 1889, and held his position until January, 1891, when he was called to Rio to enter the cabinet as Minister of Foreign Affairs.

Huet Bacellar took charge of the government of the State in March, 1891, until the definitive constitution of the state.

After its promulgation on the 23d of June, 1892, Dr. Lauro Sodré was the following day elected by the legislative power as the first governor, and to the present day is still at the head of government.

Since the proclamation of the Republic, the administration of the state has largely developed public instruction; the Normal School was, under the best methods, reformed, and its magnificent building is now finished; in the Lyceum of Pará is adopted a superior course of *letters and sciences*, and of *surveying*, and a *school of agriculture*, with practical teachings in all sciences therein applied, is to be organized. The primary schools have multiplied and improved.

The state of Pará expends upon public instruction alone over a thousand contos of reis annually.

The municipality of Pará opened the Municipal Park, paved avenues in the squares, and is in the process of erecting a monument to the Republic, the plans of which were sought for in various countries, and the monument finally contracted by an Italian artist.

Separation of State and Church has been effected, civil marriage established, and the adoption of Brazilian citizenship facilitated.

Custom-house and revenue taxes, to a certain extent, belong at present to the state.

Colonization has commenced in Pará; Dr. Lauro Sodré is the president of a committee for propagating immigration,

the object of which is to attract agricultural laborers to this most fertile region. There are already several centres on the margin of the Braganza railroad to the place called *Castanhal*. The colonists receive lands and a small salary on advantageous contracts.

Public administration, in all that concerns the state, is independent of Rio ; one can even say that in Brazil there is greater autonomy than in the United States of America.

Pará has reached a great height in its commerce, its political life, and the finances of the Republic.

The present Minister of Finance is MR. SERZEDELLO CORRÊA, a Pará man, to whom she owes the greater part of her initiative movements.

Through freedom of worship and the enlightening influences of new institutions Pará will rapidly advance, fulfilling the advantageous position granted her by nature on the map of the Union !





**PART II.**  
**PHYSICAL DESCRIPTION.**



## CHOROGRAPHY.

### SITUATION.

THE state of Pará is the most northern of the United States of Brazil, and occupies a vast region of the Republic, comprised between the  $4^{\circ} 22'$  of north latitude, and  $9^{\circ} 15'$  of south latitude, and  $3^{\circ} 11'$  and  $15^{\circ} 20'$  of longitude west of the meridian of Rio de Janeiro.

### BOUNDARIES.

It is bounded on the *north* by the Atlantic Ocean, French, Dutch, and English Guianas; on the *east* by the states of Maranhão and Goyaz; on the *south* by the state of Matto-Grosso, and on the *west* by that of Amazon.

Its boundaries are: between the state and the Guianas, the Oyapoc River and the *serras* of Tumuc-Humac and Acaragy; the rivers Gurupy and Araguaya, branch of the Tocantins, between this and the states of Maranhão and Goyaz; the Xingú River and its branches, the Fresco and Cariahy, separating it and the river S. Manoel, or of the Three Bars, a branch of the Tapajós River, from the state of Matto-Grosso; and, finally, the straight line which, starting from the confluence of this river of the Three Bars, goes to the *serra* of Parintins, on the right bank of the Amazon River, determining with the Jamundá River, up to its source, the extreme of this state with that of Amazon.

The accuracy of the limits of the state of Pará is leagued to the boundary question between Brazil and French Guiana, the final solution of which, in compliance to Art. 2 of the convention of August 28, 1817, is still awaited to-day by the nation.

## SURFACE.

Its territory is estimated at 1,149,712 square kilometres. In extent it is the third state of the Republic, and corresponds to  $\frac{1}{4}$  of the Brazilian territory, and comprises  $\frac{1}{18}$  of the surface of South America.

## POPULATION.

The census taken in 1872 is considered excessively deficient, rating, as it does, the population at 275,237 inhabitants.

Very variable has been the percentage of the increase of population in the different periods elapsed since that date, oscillating between the minimum of 2 per cent. and the maximum of 6 per cent. Adopting the mean of 4 per cent. for the annual increase of the population, we would have a total of 495,417 inhabitants. Undoubtedly it is greater, contributing towards this the Cearense immigration since 1887.

In a vast region like that of this state, capable of containing more than half the population of Europe, and whose natural riches defy the force of the best united abilities, it is grievous to reflect on the numerical value of its population—0.43 for each square kilometre!

—More deserted than Iceland!

## CLIMATE, TEMPERATURE, AND SALUBRITY.

Popular prejudice has always been very great against the climate of this region, considered by many to be the focus of malarial fevers.

Happily to-day this judgment is sufficiently modified; this modification is due, more than anything else, to the impartial opinions of distinguished foreigners who have traversed even its most inhospitable parts.

In high lands it may be affirmed that the climate is temperate, and hot and damp in the low and marshy countries.

The degree of regularity in the variation of temperature is such as to render admirable the perfection and symmetry of the respective diagram of registering instruments. The

temperature varies within the narrow limits of  $21^{\circ}$  to  $32^{\circ}$  Cent., a uniform mean to be noted in few other places. The trade-winds, which blow constantly from east and northeast, and the rains, which ordinarily fall in the afternoon, soften the climate, producing nights as mild as those of temperate regions. Herbert H. Smith, referring to the climate of Pará in his work, *The Amazon and the Coast*, thus expresses himself:

"Wet or dry season, the temperature is much the same all over the valley, and by no means a scorching equatorial heat, such as you may imagine. At Pará, it is true, people complain of the sultry days, but you shall see a dozen more sultry ones during any August in New York;  $90^{\circ}$  Fahrenheit is about the highest temperature of sunny afternoons, and the evenings are delightfully cool."

Wallace, who like Smith, wandered four years over the Amazon valley, and who has thrown much light on the region in his important work,<sup>1</sup> gives his opinion in the following terms:

"The climate of the Amazon valley is notable for the uniformity of its temperature, and for a regular supply of moisture. In many parts there are six months of the rainy and six months of the dry season, neither of which is so severe as in many other tropical regions. Withal, there are notable exceptions to the general rule in particular localities. Pará itself is one of these exceptional places. Here the seasons are so modified that its climate is rendered one of the most agreeable on the face of the globe. Had I only judged the climate of Pará from my first residence of a year, it might be thought I was impressed by the novelty of a tropical climate; but on my return from a three years' sojourn on the Upper Amazon and the river Negro, I was equally impressed with the marvellous freshness and brilliancy of the atmosphere and the balmy softness of its evenings, which certainly have no equal in any country I have visited. The greatest variation in one day is not, I think, much over  $20^{\circ}$  Fahrenheit; and in four years the lowest and highest temperature give only the extreme variation of  $25^{\circ}$ . Probably there does not exist in the world a more equable climate."

<sup>1</sup> *Narrative of Travels on the Amazon and Rio Negro.*

Such are the impartial opinions of illustrious travellers, which merit attention, corroborated, as they are, by Bates, who was over ten years on the Amazon, and who gives his opinion in the important work, *The Naturalist on the River Amazon*, in the following words :

“ Although lying [the city of Pará] so near the equator ( $1^{\circ} 28'$  S. lat.), the climate is not excessively hot. The temperature during three years only once reached  $95^{\circ}$  of Fahrenheit. The greatest heat of the day, about 2 P.M., ranges generally between  $89^{\circ}$  and  $94^{\circ}$ ; on the other hand, the air is never cooler than  $73^{\circ}$ , so that a uniformly high temperature exists, and the mean of the year is  $81^{\circ}$  Fahr. North Americans, residents, say that the heat is not so oppressive as it is in summer in New York and Philadelphia. . . . We were agreeably surprised to find no danger from exposure to the night air or residence in the low swampy lands. A few English residents, who had been established here for twenty or thirty years, looked almost as fresh in color as if they had never left their native country. . . . The equable temperature, the perpetual verdure, the coolness of the dry season, when the sun's heat is tempered by the strong sea breezes, and the moderation of the periodical rains make the climate one of the most enjoyable on the face of the earth.”

Henry Morize, whose works on Brazilian climatology were examined by the distinguished director of Rio de Janeiro's observatory, L. Cruls, divides Brazil in three thermal zones : the tropical, the sub-tropical, and the temperate.

The first zone, also called torrid or equatorial, comprises all that part of Brazil whose temperature exceeds  $25^{\circ}$  cent. The line which limits this zone—that is, the isothermal of  $25^{\circ}$ , passes the south of Pernambuco, perhaps by Alagôas or Sergipe; cuts a part of Goyaz and of Matto-Grosso, passing below Cuyabá. Then the states of Pernambuco, Parahyba, Rio Grande do Norte, Ceará, Piahy, Maranhão, Pará, and Amazon remain situated in this zone. (Quoted from Santa Anna Nery—*Le Brésil en 1889*.)

For what reason should Pará and Amazon be considered hotter than all the states comprised in the tropical

zone? Because they are found, it is affirmed, without the least examination, in the southern part of this zone, and consequently near the thermal equator.

Withal, the thermal equator (90° Fahr.) passes north of Amazon by the Antilles, 15° or 16° in its greatest distance from the geographical equator.

As Pará is wholly in the tropical zone, it is unfavorably judged both by those who think that all intertropical regions are unhealthy, as also by those who, ignoring the modifying influence of its climate, unjustly attribute to it climatory conditions identical with those of countries subject to desolating summers and droughts.

To the close observer, however, the frequency of almost daily rains, the constancy of winds modifying the solar action, gigantic forests purifying with their effluvia the air which passes through them, and the infinity of rivers which cut the immense valley and fertilize the soil in a prodigious way—to this is strongly opposed the judgment formed of Amazonian climatology.

Between the two seasons,—the rainy season and the dry or hot season—the difference is minimum and only accented by the greater or less frequency of rains.

Professor M. F. Draenert, who noted for many years the distribution of rains in Brazil, calculated for different localities the quantity of annual rain, and this is the result at which he arrived in the capital of Pará :

	<i>mm.</i>		<i>mm.</i>
January . . .	165.4	July . . .	82.9
February . . .	269.9	August . . .	77.6
March . . .	294.4	September . . .	52.3
April . . .	307.3	October . . .	17.8
May . . .	256.4	November . . .	72.2
June . . .	133.9	December . . .	58.6

The results observed in the Department of Public Works, Lands, and Colonization of Pará the current year, beginning with May, relative to rain and evaporation were :



	Rain. <i>mm.</i>	Evaporation. <i>mm.</i>
May . . . . .	153	91
June . . . . .	249	84
July . . . . .	228	119
August . . . . .	91	109
September . . . . .	186	106

The opinion of Maury about the climate of the Amazonian region is well known :

“ In all the intertropical regions of the globe, in India, in Polynesia, in Western Africa, and in New Holland, two seasons reign. During the dry season little or no rain falls; the fountains become exhausted, cattle perish, and their dead bodies contaminate the air; then it happens that in those regions the terrible scourge of pestilence develops itself.

“ In the Amazon valley this never happens; the rains, although copious, do not fall for the space of a few months, neither are they accompanied by those terrible hurricanes which appear in the change of season in India. In America mild and fertilizing rains fall during every month of the year and hurricanes are unfrequent.

“ Many suppose that because this region is within the tropics its climate is analogous to that of other tropical climates like India; but for the reason already expounded, and the absence of monsoons, and other causes which might produce the drying up of the Amazon valley by the heat in one season, or its inundation by rains in another, there is as much resemblance between the climates of India and Amazonia, as between Rome and Boston.

“ Just as one would commit a grave error, who judged the climates of Boston and Rome identical because they are in the same latitude, so he would commit an equally grave error, who judged the climates of India and Amazonia identical, because they are both intertropical countries.

“ What should be the condition of that tropical country which has its soil watered by frequent rains, and upon which is inflicted no consuming droughts during centuries of perpetual summer? In such a climate the phenomenon of an extraordinary fertility is given because all comes into life and develops so rapidly.

“ The rapid production and constant decomposition of vegetable matter during thousands of years ought neces-

sarily to enrich the surface of the territory with sufficient layers of vegetable earth. Vegetation is in continual activity, without one interval of repose; for, when one leaf falls and commences its decomposition, others spring forth which absorb all the gases.

"Such are the conditions which make the Amazon climate one of the most delightful and healthy in the world."—*The Amazon and the Atlantic Coast of South America.*

Malaria is another current report against the salubrity of this region, and one which has greatly contributed to impede its growing population; withal this prejudice is almost as wholly without foundation as that in relation to the torrid climate.

The distinguished Paraense, Mr. José Virissimo, has already in a brilliant manner refuted this idea in articles upon *Amazonia*, published in the *Journal of Brazil*, in Rio de Janeiro.

"Malaria," he says, "is the principal and most common chapter of accusation against the Amazon, and the region which it washes; well, then, I shall certainly surprise the reader by affirming, without the least fear of contestation, that in all the properly so-called banks of the Amazon from the ocean to Manáos malarial fever is, if not unknown, scarcely so common as in better and better-reputed climates.

"Fevers of this order reign on the sources of the rivers, its affluents and confluents, along the upper part of their course.

"Those most attacked by malaria, like the Madeira and Tocantins, are free, in their middle and lesser course, from these pernicious fevers.

"From many parts they have almost wholly disappeared.

"For instance, Macapá, after having been one of the healthiest places in the state of Pará, became, on account of the pools opened by excavations made for the construction of its celebrated fortress, and other incompleated works, which surround it, a hotbed of malaria. To day it is again a healthy place, cases of this type occurring more rarely each day. The same has taken place in the municipal district of Cametá, where malarial fevers have successively diminished, during the past years.

"It still remains for us to say that Amazonian malarial

fever very rarely assumes other form than that of intermittent fever or chills and ague; pernicious or typhus fevers are very uncommon, and in many parts altogether unknown.

"To be sure, malaria on the upper Madeira is terrible; it acts upon the nervous centres, kills outright, or renders one useless for a long time; enduring for many years and often resisting the most energetic and well-directed treatment. The same may be said of Juruá, of Mojú, of Cairary, and other localities; but there are exceptions.

"If intermittent fevers are endemic in the region already described; of the islands; in the upper course of the Tocantins and Tapajós; in the Xingú; in part of the Trombetas; in the upper Madeira; in the Juruá; in the upper River Negro, and in some other rivers; they rarely appear, and this with endemic mildness, in the magnificent western region where the climate is excellent, in Monte-Alegre, Obidos, Santarem, and Alemquer; in the districts of the Parintins, of Itacoatiára and even of Manáos.

"In the principal rubber district, generally the most subject to malaria, in the river Purús, there are no fevers; and the middle and the upper course of the Madeira, thanks to the progress of civilization there, to better habitations and more attention given to hygiene rules, is nearly free from them."

This opinion is identical to that given by Herbert Smith, in the work to which we have already referred.

"Now concerning the healthfulness of the river valley, that is a question with two sides. I can take you from Pará to the Andes, along the main river, and you will never have so much as a headache; you can ascend some of the tributaries and in a week you will be shivering with ague. In general it may be said that the Amazonian region is very healthy; the exceptions are in low land, swamp forest, and far up the branch rivers among the rapids.

"Certain rivers, too, are healthy during some years, but unhealthy at other times; I have found this on the Tocantins, the Xingú, and other branches. Chandless writing from the Purús, in 1865, says: 'It is now very healthy, but some eight years ago fever was so prevalent and severe one season, that the following year four or five men only ventured up the river.' I wandered for four years along the Amazon, and never had the ague at all; I caught it in three days on the Ohio."

In the same way Creveaux, Charles Wiener, and other intrepid Amazonian travellers suffered neither from intermittent fevers nor from other supposed diseases of our climate.

Orton affirmed that "without imported epidemics, Pará would be the paradise of invalids."

Instead of imputing to climatic influences certain ills, especially malarial fevers, one should with Agassiz attribute them to the habits of the resident population, *i. e.*, "to the absolute want of hygiene, or rather to the systematic violation of its rules."

The foreigner then, who wishes to live among us will find a hospitable land and a benign climate, which will guarantee him health and strength, principally if the newly arrived will not neglect hygiene prescriptions, which it is in his interest and duty to follow.

Only on immigration, only on population of this great region depends the development of those live forces which, in large copy, Nature offers to realize Humboldt's prophecy that here, "earlier or later, is to be concentrated the civilization of the globe."

"This beautiful province of Pará will certainly, one day, be the richest in South America," already exclaimed in 1847 Francis de Castelnau.

And not less enthusiastic is the following exclamation of Herbert Smith :

"A city this is [Belém] with a manifest destiny : a city of the future, that shall yet enrich the world with its commerce. Some time, who knows, it may be the true metropolis of Brazil. I can suppose that. Rio de Janeiro is far removed from the commercial world, a good five thousand miles from New York and farther from Europe. Pará is nearer by almost half that distance ; if it has not the harbor of Rio, it has what the southern city lacks,—splendid water communication straight through the heart of its continent ; and this valley, if people did but know it, is the richest part of South America.

"Pará has her title of nobility ; by her situation she is the queen of the Amazons !"

## DEPARTMENT OF PUBLIC WORKS, LANDS, AND COLONIZATION.

*Meteorological Recapitulation of the Months of May, June, July, August, and September, 1892.*

MONTHS.	Barometric Pressure Reduced to ° (degrees).	Daily Temperature.	Nightly Temperature.	Maximum Tension of Steam.	Relative Dampness.	Velocity of Wind.
	mm.	"	"		%	m.
May.....	757.5	28.2	22	16.2	57.7	5.4
June.....	758.9	30.3	22.5	16.8	61.85	9.8
July.....	760.03	29.7	22.1	17.26	60.57	6.5
August.....	758.2	31.5	22.5	17.52	62.40	6.9
September.....	758.9	31.5	22.5	17.1	61.3	7.85

## NORTHERN BOUNDARY OF THE STATE. CONTESTED TERRITORY.

It was still in the reign of Charles V. that the northern boundary of this state, or of Brazil, was determined by the landmark which, to divide the domain of Spain from Portugal, that sovereign ordered to be buried on the margin of the river named after Vincent Pinson.

With the aim of fulfilling this contract and of defending the Portuguese lands, the crown ordered the verification of the landmarks, which were to be set to separate the domain of said lands from those belonging to the crown of France, and it was in this verification that Captain João Paes do Amaral, corporal of the coast-guard, and his soldiers found the primitive landmark, to which they have referred in their deposition, made before the General Auditor, as may be seen from the legal documents, registered in the public archives of this city of Belém, and from the transcript of record and report below given, and which does not admit of any doubt regarding the boundaries of Brazilian lands:

"The year of Our Lord Jesus Christ one thousand seven hundred and twenty-three, the nineteenth day of the month of July of said year, in this city of Belém of Gram-Pará, in the residence of Dr. José Borges Vallerino, chief Judge of His Majesty, whom God may keep, and General Auditor with power, and Judge of justifications in this captaincy and its annexes, there was an order given me by him, from the Governor and Captain-General of this State, João de Maya da Gama, in consequence of which witnesses were interrogated for the contents of it, and whose answers were summarized and were joined to the same order. And all, I, Recorder of the mandate of said Dr. General Auditor recorded and read what follows. I, Diogo Leitão de Almeida write this.

"Having seen, in the orders of His Majesty, whom God preserve, concerning the lands of the Northern Cape, in which it was recommended to my predecessor to inform, if he knew, if the landmarks had been made, which were to separate the domains of said lands from those of the Crown of France, and if her subjects, against the treaty signed in Utrecht, had passed the said marks and entered on to our lands:—And having seen that upon this matter he answered with less consideration than was required on such an important subject, by the instructions given into his own hand to guide his inquiries, to which I now fully and truthfully answer, for the necessary report of which I expected by these ships, as the last solution, I deemed it convenient to execute it, in order to proceed to an exact verification of this matter, paying to it all my attention; I could find neither old nor young persons that had seen the marks referred to, nor knew if they had been set, nor where the River of Vincent Pinson, called in the French maps Oyapoc and by the natives 'Vaiapoco'; and wishing to certify such an important matter, I sent Captain João Paes do Amaral, corporal of great valor, prudence and zeal for the royal service, because I considered him the most capable in said enterprise, of giving an account of all that I committed to his care; and having sailed with three canoes, equipped for war and manned with infantry, he turned the point of Macapá, which was called by the ignorant 'Northern Cape.'

"According to the instruction I gave him, he passed the true Northern Cape with the greatest labor and in evident danger of his life, being three or four times completely lost and submerged by the terrible waves of the bore (pororóca), and the force of the currents which were met with through

all these banks and canals; and, were it not for his courage and perseverance, the compliance which had been expected of him would not have been effected; but having overcome all difficulties, he arrived at the river called 'Coanani,' supposing it to be the river of Vincent Pinson, from what he heard of one of the guides, that had intercourse with the natives, who gave him notice that in a smaller river, which flows behind, called 'Vaiapoco,' there existed a good many Frenchmen; and turning back to seek for them, he asked what they were doing, or what they had come after in the lands of His Majesty, whom God may keep, and of His dominions, to which they answered that 'they had come to buy parrots and animals, and that they had not come by the seas and coasts belonging to the Portuguese crown, but entered by the river of Vincent Pinson, called 'Yapoco,' and they had travelled by land, coming from one to another settlement, and passed by the Indians, their friends'; the said corporal then ordered them to leave those lands and to return to their own, or he would arrest them; and, having gone, some of the Indians declared that 'they had been buying slaves and all they could find, favoring and protecting the Rebel Guyaman, chief of the Aruans, and that they instigated them to disobey His Majesty, whom God preserve, and to assault the settlement of 'Moribira,' close to this town; and that said French hid said rebel'; and, indeed, following the instructions I gave him, running risks, working hard and living uncomfortably, he entered the true river of Vincent Pinson, and persistently searching, in its mouth, and in the river, on this side to discover said marks, he did not find them, nor high land, on which they might be found, and, seeing that on the other side some high land was seen, he did his best, with all care, to discover said marks, till he had the fortune to see the result of his work and diligence, ascending a hill almost perpendicular to its middle height, or with very little slope, and ascending by holding themselves with great difficulty on roots, they found from its middle upwards an easier ascension, and arriving on the top of said hill—'they found a stone and natural rock, and on this cut an almost square of three hand-breadths, with its faces cut and a little more than one hand-breadth out of the ground; and on it they found engraved some arms, which seemed to be on one side of Portugal, the five wounds or royal escutcheon, and on the other some castles with a lion, and around these stones there were some others raised as witnesses or guardians of same mark, and one of those

that lie towards the escutcheon of Portugal, showed a cross, as a badge of Knighthood of Christ, which seem to signify infallibly that to be the mark of the division of the domain of Portugal and of Castella, whether it had been placed in the year . . . by the Emperor Charles V., as History says, or in the year 1637 by Philip, when he gave the Captaincy to Bento Manuel Parente ; and it being necessary and convenient to the service of His Majesty and to the conservation of His dominions, and to avoid contests, which may come between the Crown of France and Portugal, to justify the referred'—I order Dr. General Auditor to write the deposition and the names of all witnesses who saw and met said Frenchmen, declaring the place where they met them, and what they heard from the Indians ; moreover, the entrance to the river of Vincent Pinson, the ascension of referred hill and the mark, and signs that were found on it, and the bank of the river, on which it lies ; from 'said mark, then, it can be proven that all the mouth of the river Vincent Pinson belongs to the Portuguese Crown and to the domains of His Majesty, whom God preserve' ; and thus justified he shall give me three copies of the justification, this being well archived and registered in the Books of the Royal Estate and in the Senate of the Municipality, besides being registered also in the books of the General Auditor, thus being indispensable to the royal service. Belém of Pará, 12th of July, 1723."

Portugal, strengthened by the conviction of her right, knew how to show herself inflexible in the defence of it, repelling the attempt made by France to transpose the boundaries, either by means of military posts, or by missions established in Mayacaré, Coanani, and Carapaporis ; in such a manner that the treaty of Utrecht could not but be considered as final, until the 10th of August, 1797, when that Republic sought to confound the recognized limits, imposing upon Portugal the following stipulation :

"The limits between the two Guianas, the French and Portuguese, shall be determined by the river called by the Portuguese—Calsoene,—and by the French—Vincent Pinson,—which empties into the Ocean above the Northern Cape, in about two degrees and a half of Northern Latitude."

And immediately after, there came the treaty of Badajós, celebrated June 6, 1801, with the mediation of Spain, to



make the Portuguese frontiers draw back to the Araguay, and extending the French Guiana below the Northern Cape, in the following terms :

“ Art 4th. The limits between the two Guianas shall be determined, in future, by the river Arawary, which flows into the Ocean below the Northern Cape, near the islands Nova and Penitencia, at one and a half degree, more or less, of Northern Latitude. These limits shall follow said river Arawary from its mouth, the most distant of the Northern Cape, to its source, and then in a straight line taken from this source to the River Branco, to the West.”

With these limits, however, France having not yet taken possession of the margins of the Amazon River, another blow was to be struck for the complete demolition of the treaty of Utrecht.

The 4th Article of the treaty, signed in Madrid on the 29th of September, 1801, between Lucian Bonaparte and Cypriano Ribeiro Freire, completed, at last, the great attempt :

“ Art. 4th. The limits between the two Guianas,—the French and Portuguese,—shall be determined in future, by the river ‘Carapanátuba,’ which flows into the Amazon at about one third of a degree from the Equator, Northern Latitude, above the fort of Macapá.

“ These limits shall follow the course of the river up to its source, wherefrom they shall be extended to the great chain of mountains, which makes the division of the waters, following the inflection of this chain to the point where it approaches the River Branco, near the second degree and one third of the Equator.”

The war against France in 1808 offered Portugal the opportunity for a revindication of all her rights.

The taking of Cayenne, on the 14th of January, 1808, by the Corps of Volunteers of Pará, under the command of Lieutenant-Colonel Manuel Marques, was the act by which were destroyed at once the stipulations which more and more forced back the Brazilian frontier.

Nevertheless the treaty of peace, celebrated in Paris on the 30th of May, 1814, re-establishes the confusion promoted

by France, by accepting the stipulations existing previous to 1792.

“Art. 10th. His Royal Highness, the Regent Prince of Portugal and Algarves, in consequence of the arrangements made with his allies, and for the execution of Article 8th, binds himself to deliver to His Most Christian Majesty, within the term further on stipulated, the French Guiana, exactly as it existed on January 1st, 1792.

“The effects of this stipulation reviving contest existing at that time in regard to limits, it is agreed that this contest shall be ended by friendly arrangement between the two Courts, under the mediation of Her Britannic Majesty.”

The Prince Regent of Portugal refuses to ratify this treaty, and England, his ally, proposes, January, 1815, a little modification which Portugal still considers vexatious. The immediate delivery of Cayenne, exacted in this additional article, before the limits of Portuguese domains being fixed is haughtily refused; and Portugal, that so many times had seen her domains restricted, exacts now a complete solution, capable of avoiding future ambiguous interpretations.

Hence the convention celebrated May 11, 1815, with France, and which served as a basis for the stipulation of the Vienna Congress, on the 9th of June of the same year:

“Art. 1st of the Convention. His Royal Highness the Regent Prince of Portugal and Brazil, and His Majesty the King of France and Navarre, wishing to remove the difficulties which were opposed on the part of His Royal Highness to the ratification of the Treaty signed May 30th, 1814, between Portugal and France, declare null and void the stipulation contained in article the tenth of said Treaty, and all those that may refer to it, substituting for it, in accordance with the other signing powers, the stipulations expressed in the following article of the present Treaty, which alone will be reputed valid. By means of this substitution the said high contracting parties bind themselves to consider as valid and mutually obligatory all the other stipulations of said Paris Treaty.”

“Art. 2d. His Royal Highness wishing in a most evident manner to signify his consideration towards His Majesty Louis XVIII., binds himself to deliver and declares that he

delivers to said Majesty the French Guiana to the Oyapoc river, whose mouth is between the fourth and fifth degrees of North Latitude, the limit which Portugal always considered to be that which had been determined by the Treaty of Utrecht. The time for the delivery of this Colony to His Most Christian Majesty will be determined, as soon as the circumstances allow it, by means of a private convention between the two Courts. Amicable proceedings will take place—as soon as possible—as to the definite boundaries of the Portuguese and French Guianas, in conformity with what has been expressed in article 8th of the Treaty of Utrecht.”

“Art. CVII. of the Act of the Congress of Vienna. His Royal Highness the Regent Prince of Portugal and Brazil to manifest in an incontestable manner his particular consideration towards His Most Christian Majesty, binds himself to deliver to said Majesty the French Guiana to the river Oyapoc, whose mouth is situated between the fourth and fifth degrees of North Latitude; the limit which Portugal always considered as that which was fixed by the Treaty of Utrecht.

“The time for the delivery of this Colony to His Most Christian Majesty shall be determined as soon as circumstances will allow it, by means of a private convention between the two Courts; there will be amicable proceedings, in the shortest possible time, for the definite establishment of the boundaries of the Portuguese and French Guianas, in accordance with art. 8th of the Treaty of Utrecht.”

The delivery of the colony depending, as it had remained by this article, on the private convention between the two courts, Portugal did not wish to let go the possession which she held, before the former being effected, in spite of the insistence with which France claimed the delivery. The convention celebrated in Paris, on the 28th of August, 1817, permitted France to take again possession of Cayenne:

“Art. 1st. His Most Faithful Majesty, animated by the wish of giving execution to article one hundred and seventh of the Act of Congress of Vienna, binds himself to deliver to His Most Christian Majesty, within three months or before, if possible, the French Guiana to the river Oyapoc, whose mouth is situated between the fourth and fifth degrees of North Latitude, to 322 degrees of East Longitude of the Ferro Island, by the parallel of 2° 24' of North Latitude.”

"Art. 2d. Both parties will immediately appoint and send commissioners to determine definitely the boundaries of the Portuguese and French Guianas, in conformity with the exact sense of art. 8th of the Treaty of Utrecht, and the stipulations of the Act of the Congress of Vienna: said Commissioners are to finish their work within one year's time, at the latest, counting from the day of their meeting in Guiana. If at the end of this term of one year, the respective commissioners do not agree among themselves, the two High Contracting Parties will proceed amicably to another arrangement, with the mediation of Great Britain and always according to the exact sense of art. 8th of the Treaty of Utrecht, concluded under the guarantee of that Power."

The postponement of the realization of the arrangement determined by this 2d Article, has been the cause of contests that have occasionally been raised about the lands situated between the Araguay River and Cape of Orange.

Nevertheless, France herself has several times officially recognized the right that Brazil has upon that vast territory.

The notes of her Ministers of Foreign affairs to her Minister to the Court of Brazil, on the 5th of July, 1841, relative to the post of Mapá, established since 1835, and to the Brazilian Minister in Paris, in August, 1850, upon the attempt to establish a new post in the same situation, made in December, 1849, clearly attest that the French government, although they wish to consider contestable the territory of the Northern Cape, cannot but recognize the stipulations in force, which grant the rights of Brazil, as Antonio N. Monteiro Baena has abundantly proven in 1846; Joaquim Caetano da Silva, in 1854; the Baron of Marajó, in 1861, and Cons. Tito Franco de Almeida, in 1884, and many others who have studied this question.

#### TOPOGRAPHY. CHARACTERISTICS OF THE REGION.

In general, the soil is level with a slight elevation in the interior of the continent.

To better estimate the configuration of this region, we will transcribe the words of the great scientists Agassiz and

Hartt, who carefully studied the great Amazon valley of which this forms a part.

"The Amazon valley," says Agassiz, "is not a valley in the ordinary sense of the word; it is not found boxed up between high walls shutting up the waters which pour out; on the contrary, it is a vast plain, of about 1,200 Kilometres in width, over 4,000 in length, with so slight a decline that the mean does not exceed 19 centimetres by the myriameter. Between Obidos and the sea-coast the distance is nearly 1,300 Kilometres, and the fall is not more than 13 metres and 70 centimetres.

"From Tabatinga to the Ocean there are, in a straight line, more than 3,200 Kilometres, and the difference of level is about 60 metres. The impression, at simple sight, is, then, that of a perfect plain, and the flowing of water is so slight, that it is scarcely perceptible in many points of the river. Nevertheless this last makes a slow, but incessant march towards the East, and slides over the immense plain, inclined gently from the Andes to the sea, helped on by the intermittent flowing of tributaries from the two margins, which impels the mass of water towards the north during the months of our winter, and forces it to the south in the epoch of our summer. The effect of these alternates is that the bottom of the valley is constantly dislocating itself; thence the tendency towards the formation of canals, which come from the great bed in its tributaries, like those which exist between Solimões and the River Negro, and, as Humboldt mentions, between the Hyapurá, and the Amazon. In reality all these rivers are joined among themselves by a network of canals, forming a labyrinth of ways of communication which, in great part, will always render inutile land communication.

"The valley of the Amazons was first sketched out by the elevation of two tracts of land, namely, the plateau of Guiana on the north, and the central plateau of Brazil on the south. It is probable that, at the time these two tablelands were lifted above the sea-level, the Andes did not exist . . .

" . . . At the beginning a plutonic uprising, tearing up the surface, produced the great elevated plain of Bolivia, whose characteristics Humboldt was the first to perfectly recognize; then the elevated plain of the Brazilian territory was formed, and this like that is inclined in an inverse sense, one to the northern side, the other to the southern. The

first limit of the future basin was thus found traced ; but the proper basin yet did not exist. What resulted from this great cut was a strait which occupied the void or vacuum existing between the two fragments.

"A strait, then, placed in communication the two oceans. One day the Andes appeared, which, extending from the North to the South, formed a gigantic dyke, whose declivities inclined towards the East, and the valley was traced, if not circumscribed, within its actual bounds.

"In every sense, we see the effects of the formation of the river, and the placing of its basin with a triple inclination, from which results the direction and the course of its branches.

"From this also resulted the difference which is noted between the Amazon and other great rivers. The principal bed has not a clearly circumscribed basin. It is not one canal alone, but a network of canals so much the more complicated as the affluents carry more water. The anastomoses between the different currents of water are extremely frequent. Thus the Madeira extends in an Easterly direction an arm which, after it has received several smaller branches, only joins the principal artery in Villa Bella. This principal artery also, on its side, can scarcely be distinguished, and it is not known whether these many anastomoses are or not old beds abandoned by the Amazon itself. And these anastomoses do not exist alone in the proximities of the confluents; the Solimões joins itself to the Madeira and to the Amazon; further on the Japurá divides itself into branches which extend to the River Negro. Thus the Amazon empties waters into its tributaries before it has received their own. This complicated network is found sketched, cut in the old layers previously marked out." \*

Prof. Hartt holds the same opinion as does Agassiz :

"The Amazon valley," he says, "in the beginning appeared like a broad canal, between two islands or groups of islands, of which one constituted the base and the nucleus of the Brazilian plateau, and the other to the north, that of Guiana.

"These islands appeared in the beginning of the Silurian age, or perhaps a little after it. In that epoch, the Andes did not exist.

"Before the apparition of the Andes, the Amazon valley consisted simply of two gulfs united by one canal. The

\* Translated from the Portuguese.

Andes burst out at the entrance of the gulf to the West, converting it into one real basin, though with outlets to the North and to the South. All the continent afterwards was depressed in such a manner, that the waters amply covered the plateaux of Guiana and Brazil, and the tertiary layers were there deposited, varying in thickness and constructure, according to the conditions in which they were formed.

"It is to be supposed that these layers adapted themselves in level with the bottom over which they have been deposited, remaining higher in the lower margins of the basin, and immersing from the margins to the centre. When the continent surged again over the water, the levelled plateaux were first upraised by their new acquisition of deposits; however, afterwards, the actual dividers of the waters, uniting the great plateaux with the Andes, came over the water, and the Amazon valley became a Mediterranean, communicating Eastward with the Atlantic by a narrow canal." \*

"This exposition, says the celebrated naturalist, Orville Derby, clearly explains the formation of the low lands of the low plains of Pará, and the high plains in the interior of the province. It remains to say that the undulated grounds are due to the appearance, in virtue of the denudation, of the tertiary layers, the inclined layers of formations older than the tertiary, including the cretaceous, the palæozoic and the archæan.

"The rocks of the ancient islands, first lands emerged from the Ocean which occupied the area in which the continent was formed, have undergone a profound metamorphosis, becoming converted into granite, gneiss, quartz and metamorphic schist. For this we can easily determine approximately the extension of those islands, studying the distribution of metamorphic rocks." \*

Truly this theory cannot fail to be accepted by those who have closely observed the free course of the great river and the depth of its bed, in relation to the Tapajós, the Xingú, the Tocantins, and other rivers, generally obstructed by waterfalls, and of little depth in many sections during certain seasons of the year. And to leave no doubt on the subject, there is the great island of Marajó and other circumjacent islands, occupying the enormous entrance invaded by the ocean, to-day repelled by the powerful current of the

\* Translated from the Portuguese.

Amazonian waters. Appreciating fully the geological condition of the great valley's formation, Agassiz adds:

"Nothing, or almost nothing, is known of the oldest stratified deposits which repose over crystalline masses, which first arose along the borders of the valley. There is not here, as in North America, a succession of azoic, silurian, devonian, and carbonaceous formations, emerging one after the other through the gradual uprising of the continent. There and here, withal, beyond doubt, the oldest lands of the palæozoic age and the secondary age form the base of the posterior formations.

"The first chapter of the history of the valley over which we possess authentic data connecting one with the other is of the cretaceous period. It seems certain that in the end of the secondary age the entire Amazon basin was covered with a cretaceous deposit, whose marginal part is shown in various localities in the borders of the valley. This deposit was observed following the meridional limits of the basin in its Western confines along the Andes, in Venezuela along the coast chain, and also in some localities near their limits on the Eastern side.

"The complex of these (Amazonian) deposits are found above the level of the sea although in a slightly elevated plain. The lowest layers are visible in all places from Huallaga to Marajó. They were formed, with a slight declivity, in a West-erly to an Easterly direction. In every part they present a triple character. At the bottom they are marls, clays, so finely triturated that it is almost impossible to distinguish the grains. They form absolutely a uniform and homogeneous mass. Afterwards appears a mixture of clay and sand, and finally a sand each time coarser and coarser.

"Thus: 1st. A coarse sand mixed with boulders. 2d. A fine sand deposited in thin, regular layers. 3d. Banks or meadows of clay, in layers so fine that sometimes they approach the thinness of a sheet of paper. This is in the order of superposition, the first system observed in every part.

"The layer which terminates the deposit and forms its surface, is a species of varnish of a uniformly smooth crust, without erosion, which shows that the clays were not denuded before the formation of this same layer. Above this first system appeared another deposit of sandstone, composed of gravel, grains of different rocks, coarse sandstone, indeed, a product of various materials, but precipitated also



in parallel layers, and without discordance of stratification—that is, precipitated in the same basin of smooth waters, where the deposit of the first system was formed.

“In this second order of layers are two things to be noted: 1st. The diversity in the nature of the sandstone, a mixture of coarse sand, of silica, of limestone, of oxide of iron, and a sandstone sometimes extremely hard, and in places so full of iron that it resembles this metal when coming from the mine, always very coarse sandstone; and, 2d, that sometimes is discovered the vestige of a violent reaction of the waters. This system, the most considerable, is sometimes eighty, a hundred, and even a thousand feet in thickness, and everywhere presents the same parallelism.

“The third deposit, placed over the first two, is the result of the conglomeration of the very fine sandy clays, similar to those found in the vicinity of Rio de Janeiro, and that scarcely present vestiges of stratification. The layers of this deposit are indistinct and all appear homogeneous.” \*

To complete the study of the formation of the Amazonian region it simply rests with us to make known the paleontological elements which may serve to guide the scientific observer as to the epoch of the same formation, and elucidate him in the discovery of the prodigious mineral wealth which the majestic valley conceals, awaiting only the great force of industry and the vigorous arm of man to seize it from its bosom.

*Fossils of the Devonian lands of Ereré, prepared and described by Hartt and Rathbun:*

Terebratula Derbyana	. . . .	Hartt
Spirifera Pedroana	. . . .	“
“ Elizæ	. . . .	“
“ Valentiana	. . . .	“
Cyrtina Curupira	. . . .	Rathbun
Retzia Jamesiana	. . . .	Hartt
“ Wardiana	. . . .	“
Rhynchonella (Stenocisma) Dotis	. . . .	Hall
Orthis Nettoana	. . . .	Rathbun
Streptorhynchus Agassizii	. . . .	Hartt
Chonetes Comstockii	. . . .	“
“ Herbert Smithii	. . . .	“
“ Onettiana	. . . .	Rathbun

\* Translated from the Portuguese.

<i>Tropidoleptus corinatus</i>	. . .	Conrad
<i>Vitulina pustulosa</i>	. . . .	Hall
<i>Dilcina sodensis</i>	. . . .	"
<i>Lingula spatulata</i>	. . . .	"
" <i>Graçana</i>	. . . .	Rathbun
" <i>Stantoniana</i>	. . . .	"
" <i>Rodriguezii</i>	. . . .	"
<i>Dalmania Paytúna</i>	. . . .	Hartt and Rathbun
<i>Homalonotus Olára</i>	. . . .	" "
<i>Pleurotomaria Rochana</i>	. . . .	" "
<i>Holopea Furmaniana</i>	. . . .	" "
<i>Platycera symmetricum</i>	. . . .	Hall
<i>Bellerophon Morganianus</i>	. . . .	Hartt and Rathbun
" <i>Coutinhoanus</i>	. . . .	" "
" <i>Gilletianus</i>	. . . .	" "
<i>Nuculites Nyssa</i>	. . . .	Hall
" <i>Ererensis</i>	. . . .	Hartt and Rathbun
<i>Grammysia parallela</i>	. . . .	Hall
<i>Edmondia Pondiana</i>	. . . .	Hartt and Rathbun
" <i>Sylvana</i>	. . . .	" "
<i>Mordiomorpha Pimentana</i>	. . . .	" "
<i>Palaeoneilo sulcata</i>	. . . .	" "
" <i>simplex</i>	. . . .	" "
<i>Tentaculites Eldredgianus</i>	. . . .	" "

*Fossils of the Carboniferous lands of the Coal Measures of the Tapajós, described by Derby :*

<i>Terebratula Itaítubensis</i>	. . .	Derby
<i>Waldheimia Coutinhoana</i>	. . .	"
<i>Eumetria punctulifera</i>	. . .	Shumard
<i>Athyris subtilita</i>	. . . .	Hall
" <i>sublamellosa</i>	. . . .	"
<i>Spirifera camerata</i>	. . . .	Morton
" <i>opima</i>	. . . .	Walle
" ( <i>Martinia</i> ) <i>perplexa</i>	. . . .	McChesney
" " <i>planoconvexa</i>	. . . .	Shumard
<i>Spiriferina transversa</i>	. . . .	McChesney
" <i>spinosa</i>	. . . .	Norwood and Pratten
<i>Rhynchonella Pipira</i>	. . . .	Derby
<i>Orthis Penniana</i>	. . . .	"
" <i>Morganiana</i>	. . . .	"
<i>Streptorhynchus Correeanus</i>	. . . .	"
" <i>Hallianus</i>	. . . .	"
" <i>tapajotensis</i>	. . . .	"
<i>Chonetes Amazonica</i>	. . . .	"

Strophalosia	Cornelliana	.	.	.	Derby
Productus	semireticulatus	.	.	.	Martin
"	Cora	.	.	.	Orbigny
"	Chandlessii	.	.	.	Derby
"	Batesianus	.	.	.	"
"	Rhomianus	.	.	.	"
"	Wallacianus	.	.	.	"
"	Clarkianus	.	.	.	"

## OROGRAPHY.

A simple investigation of the formation of the Amazon basin shows that in the northern boundary, corresponding to the Guianas plateau, and in the meridional given by the central plateau of Brazil, ought to preponderate the great undulations of the soil of the state.

In reality, it is in that plateau that the great chain of the system Parima is found, formed by the *serra* of Tumuc-Humac, which separates the Brazilian Guiana from the French and the Dutch, and by the Acarahy between the English and the same Guiana, and in the last is found the *serra* of Gradahús.

Nevertheless, the tellurian convulsions must not have concentrated in these extreme points; in the same way as they went on cutting the furrows, which would form later on the beds of great rivers, that ramifying themselves would marvellously cut out the region, they also produced other secondary elevations scattered about here and there, and always in a descending scale from gradation in altitude. And thus can also be pointed out the *serras* of Pará, of Almeirim, and of Velha Pobre in the municipality of Almeirim; that of Jutahy and Parauáquara in the Prainha; that of Tauajury, Ereré, and Paytúna in Monte-Alegre; that of Escama, Curumú, Sapucaú, and Valha-me Deus in Obidos; that of Parintins in Juruty; besides others of less importance, many of them simple hills and mountains, which are: those of the Mongubas, Curumiry, and Laranjal in Macapá; that of the Dedal in Faro; those of the Piraquára, Aracury, and Axicará in Villa Franca; the *serra* Piróca and that of Curuá in Santarem, that of the Trocará in the Tocantins, and that of the Priá in Vizeu.

## HYDROGRAPHY.

If the prosperity of any country depends, as is to-day fully recognized, upon the greatest development of the ways of communication which cross it, then all will be surprised at the grand destiny for which this state, by its hydrographical system, was cut out.

*Rivers.*

Numberless are the rivers which cross the territory in majestic intricacy; incalculable the *igarapés* (small rivers) which from every part draw out the prodigious mass of water, which in the millionth part of a second is emptied into the ocean; of an almost sublime grandeur are the creeks and channels, which link among themselves these same rivers and these same *igarapés*!

Mentioning the principal among them, first in order stands THE AMAZON RIVER.—It is the largest river in the world. The opinion most widely adopted as to its origin is that it rises in the lagoon of Lauricocha, in the district of Huanaco, in the department of Tarma, in  $10^{\circ} 30'$  of S. lat., and 32 leagues N. N. E. from Lima.

After Christopher d' Acuna, who proved the impossibility of Humboldt's supposition in attributing the formation of the Amazon to the reunion of the two small rivers Agumiro and Chavanillos, giving this as coming from Lake Lauricocha, this has been the origin generally adopted by geographers. It is described with such an origin by Bernardo Berredo, Martinho de Albuquerque, Ayres do Casal, Olbigny, Francis de Castelnau, James Orton, Levasseur, H. Smith, Costa Azevedo, Maltebrun, and many others.

The illustrious traveller Consul Weiner gives the account of its source in the following terms:

“In 1876, I saw Lake Lauricocha, in the heights of Huanaco-Viejo, birth-place of the King of Rivers. There, under the inclement sky of Puna, trickles from a cold lagoon a tiny streamlet of water, which, in a winding direction, crosses the

high plain of sickly and withered shrubs. More to the North this streamlet, already a torrent, is known by the name of Tunguragua, fertilizing the smiling valley of Huan-tar. And now I saw it in Pongo in the last degree of that gigantic, hydraulic staircase, which descends from the inhospitable heights of 5,500 metres to these plains, exuberant in vegetable riches . . . ”

Others, however, attribute to the Nupe the origin of the great river, resulting from the studies and explorations of the naturalist Antonio Raimondi, who endeavored to “rectify the great mistake, into which he himself had fallen years before, guided by alien writings.”

On this subject says H. Benites in his *Geography of Perú* :

“The origin of the Amazon is not the river that flows from lagoon of Lauricocha, but the Nupe which comes from farther away, and has its commencement in the Cordilheiras of Huayhuash. In the province of Huamalies, the Quero-palca and the Choula join it. Observing its course and its reunion with the river which flows from the lagoon, concludes Raimondi, the first is mightier than the second; then it is the Nupe, and not this, that is the source of the Amazon.”

Under the name of Marañon it is known in the Peruvian provinces of Huamalies, Huari, Conchucos, Huamachuco, Pataz, and Cajamarca, and the Indians call it Tunguragua. From the Peruvian frontier to the mouth of the river Negro it takes the name of Solimões; thence until it reaches the ocean it is called the Amazon.

Paraná Grande, Gram-Pará, and Orellana are so many other names which have been given to the “sea-river,” which by many is also called the “Mediterranean” of fresh waters. It has a course of 7,000 kilometres, of which 4,000 (more than the Volga) pertain to the Brazilian territory; it crosses the state of Amazonas, entering the Pará at 13° 11' of W. long. from Rio de Janeiro, then empties into the Atlantic Ocean below the equator, forming between the Northern Cape and Maguary Point an entrance 158 miles in width.

It is the greatest hydrographic basin on the globe, having 5,400,000 square kilometres. Its smallest width, in Obidos, measures 1,892 metres, with the mean depth of 75 metres.

Martius calculated the current of the water here at 499,584 cubic feet per second.

The Amazon empties into the ocean 250 millions of cubic metres hourly; the velocity of its current near the mouth measuring three miles per hour; but the influence of ebb and flow is felt at 900 kilometres from the ocean.

It is subject, like the Nile, to a periodical overflow and fall, this beginning in the end of June, and the overflow in the months of December and January.

It receives in its course the waters of one hundred other rivers, of which the principal in Amazon state are: the Javary, Jutahy, Juruá, Teffé, Coary, Purús, and Madeira on the right side, and Napo, Içá, Japurá, and river Negro on the left; and in the territory of Pará the Trombetas, Parú, Jary, Anauerápucú, and others to the left margin, and the Tapajós, Curuá, and Xingú to the right; some wishing yet to consider as its tributaries the rivers Pará and Tocantins, and all rivers of the same zone.

THE TROMBETAS.—It rises in the *cordilheiras* of Guianas, in the *serra* Acarahy, from the confluence of the rivers Capú and Mahú, also called Apiniau.

It is navigable to the extent of 135 miles, its principal rapid being at  $1^{\circ} 6' 2''$  S. lat. and  $14^{\circ} 15' 1''$  W. long. from Rio de Janeiro.

It receives several affluents, the Jamundá or Nhamundá being the principal one, of which we will occupy ourselves later on, and which serves as a boundary between the state and Amazon; the Cuminan which comes from the *campos* of Brazilian Guiana, many times dashing down over the highest cataracts which are found in rivers of this region.

The river Cuminan was first explored to its sources by Father Nicolino, and lately by the engineer Tocantins, both equally surprised at the splendid zone it crossed.

THE PARÚ.—It flows into the Amazon near Almeirim, having its source in the *serras* of Parú, and a course of 550

kilometres, with 400 to 600 metres in width. The navigable part of this river measures scarcely 160 kilometres, and Dr. Creveaux, who explored it, judges it navigable to a still lesser extent. The illustrious explorer, Domingos Soares Ferreira Penna, writing to H. Smith over the Parú, thus discourses :

"I know it as far as the lowest rapid, to which point I ascended in a steamboat. From this point to the mouth the river runs about seventy miles through a valley which varies gradually in width; sometimes the hills and little serras almost reach the bank; again, and especially in the lower course, there are low plains. In this lower portion the river divides into two unequal channels, which unite again twenty miles below; 10 or 12 miles below this junction the river passes close to the serra d'Almeirim and flows out into Amazon by the Parará-miry d'Almeirim. The general course is the east-southeast, varying a little to the southeast.

"The river is navigable for small steamboats; channel crooked, and about as wide as the Maycurú at Monte-Alegre (300 yards). Report says that there are many rapids in the upper course; all, except one, passable for small canoes; between them there are many hours of unobstructed navigation."

THE JARY.—It rises in the *serra* of Tumuc-Humac of Guiana, running in the lower part parallel to the Parú; withal it has a much greater extension than this, and crosses a much richer region. This river was also explored by Creveaux, who found its course obstructed by frequent rapids, among the most notable of which are: Pancada, Escada, Grade, and Desespero, the first rapid being 120 miles from the mouth. Ferreira Penna, describing it, says: "This fall is a perpendicular leap, a sheet of water flowing over a wall, 12 or 14 metres high; at the left, a spout or jet empties into the same basin. Still farther, to the left, there is a little cascade."

ANAUERÁPUCÚ.—Also called the river of Villa Nova; it rises in the highlands of Brazilian Guiana, and after a per-course quite extensive, generally in the sense of E. S. E. varying to S. E. across lands proper for cattle raising, it

empties its waters into the Amazon, by two mouths, one 15 the other 20 miles above Macapá.

The TAPAJÓS is formed by a reunion of the rivers Arinos and Juruena, both more than 600 kilometres in extent. The first rises in the *campos* Parecis  $14^{\circ} 42' 30''$  S. lat. and  $63^{\circ} 3'$  long. W. of Paris, and the second in the estate, Estivada da Serra Azul.

Both part from the "divortium aquarium" in the state of Matto-Grosso, following directions opposite to the Paraguay River, at half a league's distance, so that on the occasion of the great overflowings, the waters of these rivers communicate, giving passage to small embarkations.

The Tapajós has 1,300 kilometres of extension (equal to the Rhine or Dwina northerly), the principal branches being the Arapiuns, Mapiiry, Cury, Bom Jardim, Cupary, Crepory, Tropas, that of Aguas Boas, S. Manoel, or the Trez Barras, which serve as the boundaries of the state.

Its course, withal, is obstructed by 28 rapids, the principal of which are: Maranhãozinho, Great Maranhão, Furnas, Bacabas, Coatá, and Apuhy in the state of Pará, and Salto Augusto, which dashes down a height of 20 metres; Tocairal, Salsal, Rebojo, S. Lucas, Dobração, Labyrintho, Banquinho, Canal do Inferno, and Todos os Santos in Matto-Grosso.

At 23 kilometres above Itaituba the Tapajós takes a considerable width, which varies between 16 and 20 kilometres, until near Santarem, where the river presents scarcely a width of 2,500 metres, more or less.

Chandless, in his *Notes on the Rivers Arinos, Juruena, and Tapajós*, gives the following intermediate distances, in English miles, for the different points of the Tapajós: starting from Porto Velho to

Mouth of the Sumidouro.	. . . . .	80 miles
" " River Tapanhonas	. . . . .	120 "
Height of the Arinos Waterfalls	. . . . .	100 "
Mouth of the Arinos	. . . . .	120 "
Salto Augusto	. . . . .	140 "
Mouth of the River S. Thomé	. . . . .	65 "
" " " " S. Manoel.	. . . . .	80 "



1st Settlement of the Mondurucús. . . . .	80 miles
Mouth of the River Crepori . . . . .	100 "
Apuhy Waterfall . . . . .	120 "
Itaituba . . . . .	25 "
Santarem . . . . .	170 "

In the summer the tides extend to Itaituba, and Bates observed them in an arm of the Cupary, much above the mouth.

Over the affluent Arapiuns or Arapichuna was also made by the official Fleuriot de Langle an excellent map.

The Mundurucús Indians, who populate its banks, are very pacific and industrious.

On the right side of the mouth of the river Tapajós is situated the town of Santarem, and along the river are the villages of Aveiros and Itaituba, and the settlements of Villa Franca, Bom-Gosto, Alter do Chão, Boim, Pinhel, Santa Cruz, Uxituba, Cury, and Brazilia Legal.

CURUÁ DO SUL, or Curuá de Santarem, is the river called which washes the eastern part of the municipality of Santarem and empties into the right side of the Amazon, to be distinguished from the Curuá Panema, or Curuá d'Alemquer in the municipality of this name.

It is formed by two principal branches: the Curuá and the Una.

The first, more extensive, runs in the midst of the plains in a northwesterly course, and is a confluent of the Una, which runs between *serras*, accompanying to a little distance the Tapajós, and interrupted by various waterfalls. In Pacoval Point, 15 miles close to the Amazon, the Curuá divides itself into two branches: receiving at the right the Tamucury and the Igarapé Grande, and emptying into the Amazon with the name of Cuçary, already in the territory of Monte-Alegre; and the left branch runs in a general course to the north, and goes to the Amazon in front of the island of Barreiras.

Between this river and the Tapajós are found the bores of Ituki, and Mahíca simply two defluents of the Amazon, which run through the meadows of this right margin and terminate in one sole mouth.

**THE XINGÚ.**—It is one of the most fertile rivers in the great Amazon basin, as well as one which guards most closely its enormous wealth. Explored in 1843 by Prince Adalbert of Prussia, accompanied by Counts Oriolla and Bismark, to the extent of 421 kilometres, it was last studied by Dr. von den Steinen, William von den Steinen, and Orthon Clauss, and the elucidations by them thrown over that region brought great light over the important valley of the Xingú.

Ferreira Penna, describing the tributaries of the Amazon, writes in the following manner over the Xingú :

“The Xingú takes its rise in 15° S. Lat. Its principal affluent or confluent (for all reports make it equal to the Xingú itself) is the Iri.

“The river flows from South to North ; in its upper and middle courses it is often widened into lake-like expanses, with numerous wooded islands. It is so wide that open horizons are almost always seen up and down the channel.

“Only after receiving the Iri the river suddenly changes its course, and forms a great curve. At the beginning of this curve the Xingú is, so to speak, folded back on itself returning to the southeast ; here it forms a lake so wide that Prince Adalbert compared it to the sea ; thence the course is changed to the North and West until it reaches about the original longitude, in which it continues its course to the Amazon.”

“In this immense curve are the principal falls, chief among them that of Itamaracá, utterly impassable for any vessel. The water rushes down a steeply-inclined plain two or three miles, and then precipitates itself in a tumultuous mass over a perpendicular wall of rock, forming the ‘Salto de Itamaracá.’ Fortunately for the canoe men, the river before it arrives at the inclined plane has divided ; the lesser branch, called the Tapayúna, has also many perilous rapids, but they are passable by small canoes at certain seasons. Below Itamaracá there are other falls, but small ones, which can be passed during the floods. Below these there are reefs and islands until the river finally assumes its northwest course, which it keeps to Porto de Móz.

“At Lat. 3° S. there are numerous alluvial islands, and here the river is already three or four miles wide ; below them the channel is unobstructed. The greatest width between Pom-

bal and Veiros is four or five miles ; thence the river narrows gradually to Porto de Móz, where it is less than a mile wide." (Cited from H. Smith.)

"The Xingú," writes the same explorer, "is shorter and smaller than the Tapajós ; its navigability, however, excepting in the falls of Grande Curva, is superior. The Tapajós is in all its middle course obstructed by falls and rapids which can only be passed by land ; but the Xingú, in the corresponding portion, is quite clear. On the head waters there are numerous rapids, but they are all passable by *ubás* and other small canoes."

Besides the referred Salto de Itamaracá, its most important falls are the Taiuna and Jaraquá.

The Xingú receives on its right margin fourteen affluents, and on the left, sixteen ; among them the principal being the Matary, the Arapary, the Jarauá, Hyabú, Bacajá, Itatá, Ituna, Guará, Ambé, Guiriri, or Iriri, with its confluent Carini, and the rivers Fresco and Cariahy that serve as a meridional boundary to the state of Pará.

In its right side are situated the town of Porto de Moz, the village of Souzel, and the settlements of Carrazedo, Villarinho do Monte, Tapará, Bôa-Vista, Veiros, and Pombal.

The tide is not felt beyond this last settlement.

TOCANTINS.—"It is," in the opinion of James Orton (the Andes and the Amazon) "a magnificent river, which waters the region where is to be found the most delicious climate of all Brazil, running over a bed of diamonds, rubies, sapphires, topazes, opals, gold, silver, and petroleum."\*

Of the large rivers of Pará this certainly is the most explored. It also rises in the "divortium aquarum" in the sources of the rivers Paraná, Paraguay, Guaporé, and Tapajós. It is a question withal, yet to be decided, to which of the rivers falls the honor of the source of the Tocantins, if to the Uruhú, which rises in the meridional base of the *serra* Dourada ; if to the Almas, which has its origin in the Pyreneos mountains ; or to the Maranhão, whose head is found in the Lagoa Formosa. That which is certain is, that all three contribute towards the formation of the great river ; the

\* Translated from the Portuguese.

Uruhú, mixing with the Almas, and thus becoming enlarged, reunites itself with the Maranhão, whose name predominates. Later on, it meets, on the right, the Paranatinga, and it can be affirmed that it is from the junction of the two rivers that the Tocantins is formed.

Thence, onwards, the largest affluent which the Tocantins receives, is the Araguaya, which limits Pará with the state of Goyaz.

Ladisláo Baena gives twenty-six affluents to the Tocantins on the right side and twenty-five on the left.

Below the Araguaya, except the Tocayunas and the Paránámucú or the Ipahú, all are of little importance.

The general course of the Tocantins is north, with slight modifications towards the west.

From Jupatituba point, at the mouth of the Tocantins, until S. John of Araguaya, situated on the left margin of the mouth of this affluent, the distance is 258 miles, the first waterfall, "Guaribas," being 138 miles distant.

Between Alcobaça and the mouth of the Araguaya are twenty-seven waterfalls, the principal one being Itaboca.

Writing over the region of the low Tocantins, Ferreira Penna says :

"To have an exact idea of the region of the low Tocantins, one glance alone at the margins of the river does not suffice ; it is necessary to visit them in different seasons, study their appearance during the overflow and during the drought, and carefully examine the transformations through which during these two seasons this region passes. No other river, in fact, offers so diverse an aspect in summer and winter, and it is this double physiognomy which has induced some to call the margins of the Tocantins a paradise, and others an inhospitable region. . . .

" . . . The Tocantins, from the Guaribas waterfalls to the bay of Marajó, where it receives the waters of Anapú and Pacajá, already mixed with a small contingent of the muddy Amazon, has an extension of 150 miles, running in a general course of S. S. W. and N. N. E.

"Its width varies greatly with the nature and height of the marginal lands. Thus, when they are stony or are elevated in bars the river contracts, gaining in depth as it loses

in width ; on the contrary, when they are low or form meadow-lands the river disperses its waters, dividing them into arms or branches more or less voluminous.

"Below the village of Baião, which is found in front of various islands formed by branches of the river, this reunites all their waters, and passes by a strait between the point of the eastern bank and the Mangabeiras bar, the only one which, in all this fluvial section, appears on the other side.

"The strait passed, newly dividing itself into various branches, it progressively widens until it enters the Marajó Bay, its mouth being nearly ten miles in width.

"Among its most notable islands can be counted, the Jutahy formed by the bore Cachoeirinha, which unites the Tocantins to the Matracurá, its branch ; and that of Bacury, formed by an arm of the river, which passes at the foot of the village of Baião, commencing in front of the bar of Matracurá and terminating a little above the strait of Mangabeiras ; to this are added other islands, among which figures that of Uaymi.

"After the islands Jutahy and Bacury the most extensive are Sant' Anna, Ingapijó and Tauaré.

"The little islands of Guariba and Bôto, in the centre of the cataract bearing the first of these names, and those of Arapapá, Pacas, Arcos and Tauajury, below this cataract, are almost, if not exclusively, formed of great masses of volcanic rocks, crowned with a low vegetation, which contrasts strongly with the luxury and opulence of that adorning the high banks of the river. This vegetation is reduced to a certain species of *Psidium* in the groups of rocks to be found at the sides and below that cataract, and in the line of stones which accompany the right margin thence to the Arcos island, forming hundreds of islets on the surface of the water.

"The right bank, in general, is much higher than the left. A line of bars, whose greatest height scarcely attains 62 to 74 feet, extends from Limaô point (below Baião) to the Guaribas waterfalls, but disappearing in one or the other point of the bank for the interior. The knoll Arroyos, which reaches the height of 221 feet, is the most elevated point to be encountered in all this fluvial section. The Tocantins has no notable tributaries ; the Ipaú, which alone could enter this class and which runs parallel to the Pacajá, divides its waters into two branches, one of these flowing into the Tocantins itself, by three mouths, under the names of Itacuruá and Cupuioca, in front of the great

island of Jutahy, and that of Carará below the bar of Matacurá.

"The other branch, with various other channels, goes to form the river Jacundá, which has its bar in the end of the Boccas Bay."

On the Tocantins banks lie the town of Cametá and the villages of Mocajuba and Baião, besides the settlements of Tocantins, Limoeiro, Janua Coeli, Cametátapera, Pacajá, Cupijó, Parijós, Carapajó, Caripy, S. Joaquim, Pederneiras, Patos, Alcobaça, Arcão, and S. João d' Araguaya.

The railway, already planned, which is to unite Alcobaça with the Rainha shore, above S. João d' Araguaya, thus conquering the difficulties of the waterfall section of the river, and uniting the high Araguaya with the low Tocantins, will act, aided by steam navigation in the two rivers, as a powerful chain which shall unite the states of Goyaz and Pará, and will be a fertile element of prosperity to the Tocantins region.

Touching this much disputed question, as to whether the Tocantins is or is not a tributary of the Amazon, says the very illustrious Dr. Francisco da Silva Castro :

"A simple glance at the hydrographical position of the Amazon and Tocantins, separated one from the other by a land zone of more than forty leagues in width, amply suffices to show that many errors have been committed by geographers, who suppose the Tocantins to be an affluent of the Amazon ; and really I am not surprised at this error, as none of them have visited the country, and attracted by the enthusiasm which the majestic corpulence of the great river excites, they do not hesitate in rendering it blind homage ; lending it a mouth of sixty leagues in width, from the Tijoca point to the Northern Cape, and sacrificing to it as a vassal the Tocantins, simply because this river has the audacity to discharge its waters in the same region overpowered by the Amazon.

"No. . . . the waters of the Tocantins run separately along the meridional border of the great island of Joannes or Marajó, while those of the Amazon bathe the northern margin of the same island, without ever intermingling. And if by the affluent of one river is understood that other, which with its waters goes on to enlarge those of the first, then

rather let the Amazon be considered an affluent of the Tocantins, for the reason that, by the two channels of Tajipurú and Breves, it sends a portion of its waters to the Melgaço and Breves Bays, prolongation of that of Marajó, where glide the waters of the Tocantins.

"If the island of Marajó is mentally abstracted, there remains a wide, deep cove, whose mouth or cord, taken by the point of Tijoca and by the Northern Cape, will have approximately 60 leagues of extension. By the northern division of the enseatic curve—that is, by the Macapá coast to the Northern Cape, the Amazon empties its waters in the direction that this same coast is washed by them; and by the southern coast—that is, of the capital (Belém) to Tijoca, the Tocantins empties its waters in a direction almost parallel to the Amazon, for the reason that the Tocantins, running from south to north, inclines to northeast from the town of Cametá to its mouth, in an extension of 40 miles, the beds of the two rivers then remaining more than 40 leagues distant one from the other—the shortest distance.

"The island of Marajó, being placed precisely between these two rivers, within this space of 40 leagues, and prolonging itself to the cord or mouth of the cove, completed the separation, preventing the intermingling of the two waters, even in the ocean."

PARÁ RIVER.—This is the name given to the fluvial section to the south and east of the island of Marajó, from the Bay of Goiabal to Tijoca Point and Cape Maguary on the ocean, and which serves as a drain or discharge to the waters of the Tocantins (whose direction it follows, inclining towards the northeast); to the different rivers and *igarapés* (channels) parallel to it, and that have their mouths in the bays of Portel, Melgaço, Boccas and others; to the waters of Mojú, Acará, Guamá, Capim, and Guajará, and all that run to the bays of these names, of Santo Antonio, of Sol and Marajó; as well as the waters of the Amazon which form the western boundary of that island, crossing the labyrinth of canals which are called Tagipurú, Macacos, Jaburú, and Bore of the Company, etc., and which give reason to extend the estuary of the Amazon to Tijoca Point, and also give rise to the opinion, by many accepted, that the Tocantins is a branch of the great river.

**THE ARAGUARY.**—Granted that the mouth of the Amazon extends to the Northern Cape, this is the last important branch on the left margin.

It rises in the mountain ridges of Tumuc-Humac, at two degrees, more or less, north latitude, and running in an easterly and southeasterly direction, receives the waters of the Tracuátuba and Mapary, and passes through a territory, generally elevated, as far as the last cataract, that of the Mongubas, near the *serra* of this name, where the river returns northeast and, following a sinuous course, and after 488 kilometres, empties its waters thirty-five miles below the Northern Cape, having previously received in its left margin its principal branch, the Aporema.

Below the cataract, which is 130 miles from its mouth, the lands and the banks of the river are low and marshy, and near this place, at the left bank of the river, is the military colony of Pedro II., founded in 1840, and the Colony Ferreira Gomes, at the right bank, founded in 1890.

The AMAPÁ, MAYACARÉ, CALSOENE, and COANANÍ, which flow above the Northern Cape into the Atlantic Ocean, though little explored, are so many other large rivers, of which special mention has been made in discussions over the boundary question of French Guiana.

The CASSIPORÉ has, like these last, its rise in the *serra* of Tumuc-Humac, and flows in a northeasterly course to the ocean at  $4^{\circ} 15'$  north latitude, forming the Cape Cassiporé. Its principal branch, by the left margin, is the Juísa; and, according to the account of the natives, who know well this region, a great branch extends to the south, establishing the junction of the river with the Araguay.

**THE OYAPOC.**—This is the great river whose geographical situation appears really destined to the aim for which it is given—the separation of Brazilian lands to the ocean, up to its source, made by the mountains of the system Parima.

It rises in the extreme east of the Tumuc-Humac mountain ridges, and in the southwesterly to the northeasterly direction it runs to the ocean, where its mouth lies between Silver Mountain and Orange Cape, at  $4^{\circ} 22'$  north latitude.



The Oyapoc counts several branches, such as the Camopi, the Memoria, and the Cuericourt, the Uassú being the principal, which at its right bank runs in near the mouth of the river.

The Oyapoc is the celebrated river of Vincent Pinson, determined by the Utrecht treaty to be the boundary of Brazilian territory, to which we have already referred.

The JAMUNDÁ is another boundary river of Pará; it separates the state from that of Amazon.

Ferreira Penna, who best studied the Lower Amazon region, through which it runs, thus describes it:

"This river must come from the central region comprised in the space between the high Trombetas to the north, and the Uatuman to the south. Thence descending the Jamundá, in the beginning, probably runs E. S. E., between mountains; receiving small branches, it afterwards directs its course S. E., crossing small cataracts, and enters a spacious plain, or valley, densely wooded, but sometimes marshy. Accompanying this plain, issues from its left margin an arm, which, bearing its name, crosses it and empties itself in the Trombetas, exactly at the point in which this river, jumping the last cataract, enters also the valley.

"While crossing this flat region, the Jamundá is nearly obstructed by an infinity of islands, which follow its windings until near the confluence of the Pratucú, not exceeding 250 metres in width, which in summer is reduced to 150, and even 100, according to the greater or less duration of the dry season.

"Before reaching the Pratucú, it leaves the valley, and then its banks become high and sometimes mountainous.

"The Pratucú, which is a smaller branch, runs more or less parallel for some time to the Jatapú (a tributary of the Uatuman), follows an eastern course, and reunites itself with the Jamundá, nearly 36 miles above Faro. Its course is sinuous, and between low mountains or *serras*, as almost all of this region, and in its bar, in the Jamundá, divides itself into three unequal arms, with two islands between.

"At the point of the junction of the two rivers, the waters expand considerably, forming a vast bay, almost surrounded by high lands and mountains; a little below is the extensive island Capixauaramonha, composed of rocky lands, but covered by trees.

"Two *serras* spring in the right margin of the river in front of the two points of that island ; that of Dedal frontier to the superior point, and Copo in front to the inferior point ; this last is a high rock which lies almost perpendicularly to the river.

"Leaving the bay, the Jamundá flows east, in a considerable stretch, scarcely making slight bends ; and after eighteen or twenty miles of this course, it describes a vast-S-inverse, at the end of which it enters in an easterly course into the Faro Lake, leaving the village of this name to the northern point of its entrance.

"From the confluence of the Pratucú, the Jamundá is a vast, magnificent river, of deep blue color, flowing almost always between mountains clothed with vigorous vegetation, cut in by points and coves, and bordered by beaches of snow-white sands,—constant accidents which attend its course to Faro Lake.

"Here terminate the *serras*, or hills, which accompany it ; here disappear the beaches of sand and brilliant vegetation ; here finish the undulating lands, and commence the almost level lands of the Amazon ; here is, finally, the true mouth of the Jamundá.

"Indeed, the lake scarcely closes at the Western side and the Jamundá withdraws itself in a narrow bed, and there, on the right margin, enters the Cabury, the first branch or Paraná-miry which the Amazon sends to it.

"The river loses its superb aspect ; its bed narrows ; its course becomes vacillating, its color somewhat lighter with the small quantity of whitened waters of the Cabury ; vegetation loses all its splendor, and its banks are slightly bordered by a narrow line of middling-size trees alternating with grasses, cyperaceas, and other herbaceous plants, which cover its vast coast surface.

"The river does not take a Northerly to a Southerly course, as has been pretended, but a general course E. N. E. to Paraná-miry do Caldeirão. In this section it is accompanied, near the margin, by a series of lakes, some large, like the Caruary, Algodoal, and Arakiçaua, or smaller, like the Maracaná, Ubim, Abaucú, etc., on whose shores are a number of country-houses, with small plantations, as in the meadows are many herdsmen's huts, also those of keepers of cattle estates.

"Leaving the lake Arakiçaua, which is the last of this section, the river widens 300 metres, turning to the north, passing the place called Repartimento, where it receives in

its right bank, which now is the Eastern, the Paraná-miry do Caldeirão, which comes from the Amazon.

"Placid, wide and of crystalline purity, the Jamundá, receiving this branch of the Amazon, totally changes its physiognomy; its bed narrows and deepens; it makes a precipitate headway, and its waters take a yellowish-olive color, losing all their transparency.

"Hence its general course, until it is lost in the Trombetas, is N. E., making however, numerous windings, now to the North, now to the East, and occasionally to N. N. W. Its banks are still bordered by a narrow fringe of trees, behind which are only seen herbaceous plants and various lakes.

"In this passage it leaves to the left the bore of Paciencia, which gives entrance to the lake Piraruacá, the Caraná, Mariapixy and Sapucuá, which come from lakes of the same names.

"On the right or Eastern bank, are also seen some insignificant bores, which come from small marshes that accompany it.

"It enters into the Trombetas in front of the Uruá-tapéra point, with 100 metres of width, the island Jacitara lying at the North of its mouth.

"The extension of the course of the Jamundá in the valleys is not less than 28 leagues, 14 being in the 1st section of Faro to Repartimento, and 14 in the 2d section of Repartimento to Trombetas.

"Then it is seen that the Jamundá, contrary to what has been affirmed, is actually a tributary of the Trombetas and not of the Amazon."

THE CURUÁ DO NORTE OR "CURUÁ PANEMA."—This is an extensive but narrow river, which, from the high *campos* of Brazilian Guiana, to the north of the territory of Alemquer, runs in a southerly course, with some sinuosities over the S. W. and several secondary arms, crossing a notably fertile zone, in which abound the tonka-beans, Pará-nuts, and vegetable drugs. Unhappily in a part of its course, the lowlands are in certain seasons insalubrious. From these lowlands the last name Curuá Panema is applied to the river. Always in that direction the river joins Lake Curuá in two fork-like branches, one losing itself in the Paraná-miry de Alemquer, crossing a succession of small lakes, and the other joining the *igarapé* of Itacarará, which washes the city of Alemquer.

The settlement of Curuá is the most important on its bank.

Accompanying the left bank of the river, a wagon-road is being opened, which, leaving the town of Alemquer, is destined to establish communication between the referred *campos*, and the same town.

THE ANAPÚ.—It has its sources in the *serras*, which divide themselves in the south of the state at the height of the great curve of the Xingú, and takes a southern to a northern course to the island of Jacitára, receiving some branches, of which the most important are the Tueré and the Prauacurú. Thence it widens in a southeasterly to a northwesterly direction, forming its first bay, called Pracupy, in which flows the river of the same name. Afterwards it unites its waters in a strait called Castanhal, opening further on a vast bay called Camuhy.

Leaving this the river follows an easterly course. By the bore of Pacajahy, it connects with the Pacajá, forming newly a deep strait and afterwards emptying its waters in the extreme northwest of the Bay of Portel.

This river is the longest and most important of those between the Tocantins and Xingú. It has several waterfalls, many branches, and is navigable from its mouth to the confluence of the Tueré, nearly 140 kilometres.

The banks of the Anapú are high and delightful, in the lower part, and mountainous in the upper.

THE PACAJÁ.—It descends in the same course as the preceding, flowing through a mountainous region, receiving as branches in the left bank the Iryúaná and the Arataú. When it meets the Pacajahy, it suddenly turns towards the east, joining its waters to those of the Camaraipy, which is parallel to it, and enters into the Bay of Portel.

It is navigable to a great length only to the first cataracts.

THE JACUNDÁ.—This is a short river, the direction of its course being, more or less, the same as of the former. It enters into the Bay of the Boccas.

In the first 66 kilometres, counting the mouth, its length

varies between 200 and 600 metres, with sufficient depth for steam navigation. The banks of the Jacundá are low in the inferior section, and high in the superior.

**THE ARATICÚ.**—Without forgetting the Taquary, Panaúba, and Mocajatuba, which have a certain notable extension, it may be added that the Araticú is the most important river after the Pacajá, above the Tocantins, which it follows more or less in a parallel direction.

This river is notable from its communication, which, by means of an arm that enters the Lake of Gold, establishes a communication with the Paranámucú, which flows into the Tocantins in front of the large island of Juruty, above the Bay of Baião.

On its left margin and near the mouth is situated the village of Oeiras.

The GUAMÁ and CAPIM are the two rivers from whose confluence is formed the Guajará, which flows southeast of the capital, into the great bay, which has its name. The first rises in the *serras*, which at the southeast of the state and below 3° of south latitude shoots into branches from the *serra* da Desordem and Piracambú, in the state of Maranhão, and runs in a northern direction above the village of Ourem, turning rapidly towards the W. to meet the Capim. Navigable until below that village, it receives on both sides of its margins several branches, the principal being Irituia, a narrow and very sinuous river, on whose banks is situated the village of the same name.

In front of the village of Ourem is the second waterfall of the river, which impedes its navigation; the first being passable at full tide in front of the town of S. Miguel, below the mouth of the Irituia.

Capim has its origin at the *serra* da Desordem or in the *serra* dos Coroados, as is generally called the mountainous section inhabited by the indigenous tribe of this name. Formed by the confluence of the rivers Surubiú and Ararandeuá, in a sufficiently sinuous course, the river follows a northeasterly direction until it receives the waters of the Candirú, its principal branch, and thence it returns to the



north, until its junction with the Guamá. On the right side is situated the settlement of Capim, and in the upper part different settlements of pacific Indians.

At the angle formed by the reunion of the two rivers is the village of S. Domingos da Boa-Vista.

THE GUAJARÁ.—It is, as has been said, the continuation of the Guamá enlarged by the waters of the Capim. Its width, in the mean, is half a mile, not offering withal free navigation to large steamers, on account of the sand-banks, which obstruct, more or less, its mouth. The direction of the Guajará is generally from east to west, describing below the river Bujarú to the front of the fazenda Pernambuco, a rapid curve in the form of a horseshoe.

The principal branches, all narrow, are the river Bujarú, Ihangapy, and Caraparú.

The ACARÁ and MOJÚ are two important rivers which flow into the bay of Guajará. Both have their sources in the lowlands between the Tocantins and the Capim.

The Acará is formed by the reunion of two distinct branches, one the Rio Pequeno, which accompanies in a north course, the course of the Capim describing many sinuous curves, and the other, the Acará properly said, which goes from the S. S. W. to the N. N. E. until it unites with the first.

Afterwards, below the confluence and on the left bank, is the village of Acará. Hence the river turns N. W. and after it meets the Mojú, it loses itself in the great bay.

Although the *igarapés*, its affluents, are numerous they are still of little importance.

The course of the Mojú is less extensive; it has the same sources as the Acará, but the direction of its course is opposite. It runs first to the N. W. until it meets the Caijary and thence directs itself in a N. E. direction to join the Acará.

On its bank lie the settlement of Cairary and the village of Mojú.

A canal which goes to a place called "Entre Ilhas" connects the Mojú with the Tocantins and Abaeté.

In the region called Salgado, which extends from Tijoca-point to the mouth of the Gurupy, several rivers flow in the

ocean. These are all narrow, small rivers. Their sources often mingle with the branches of the Guamá, which flow in opposite directions.

The principal are the Mojuim or Salgado, on whose banks lies the village of S. Caetano, the Marapanim, on whose mouth is the village of the same name; the Maracanã or Cintra River, thus called from the town found here, the Quatipurú, which crosses the *campos* to which it gave the name, the Caeté, which after it passes the settlement of Tentugal washes the city of Bragança, and the Piriá.

The first three run more or less in a N. N. W. direction and the last incline towards the N. E.

The region which they cross is generally fertile and agriculture is there more largely developed.

THE GURUPY.—This forms the boundary between Pará and Maranhã, and although narrow, its width reaching scarcely 400 metres, it is of considerable importance on account of the richness of the fertile territory which it crosses and so auriferous that in its bed the sands are constantly mixed with spangles of gold, for which the natives search, following the old system.

It has its source in the *serra da* Desordem at 4° 40' S. latitude, being its original river, the Cájupára. The course of the river is N. E. to the 4°, and thence flows to the N. with few windings. It receives several branches, principally at the right, the most notable being the Gurupy-miry, Pimental, Ubinzal, Gurupy-una, Coaracy-paraná, Pirateua, and Tapuruteua.

At the left margin of this river is the settlement of Gurupy and village of Vizeu, 27 kilometres from its mouth on the ocean.

From the lowlands in the island of Marajó irradiates also a system of numerous natural canals appropriate to the desiccation of the island. To the north are directed the Tarugas, the Ganhoão and Arapixy, risen in the Mondongos in the centre of the island, and the Caju-una, which, by three mouths above Chaves, enters into the Amazon, passing the village of Affuá.

To the south of the island run the Anabijú, the Atuhá the Pracuúba, the Canaticú, and the Piriá. The Atuhá has its sources in the forests and the Anabijú in the *campos*, mingling itself with the sources of the Anajás, and following the first in a southeasterly course, and the last in a southerly course, approximating each other and lastly joining until they flow into the bay of Goiabal. From the confluence of the two rivers there comes another branch which is called Furo do Atuhá, (on whose bank is the village of Muaná) which enters in the same bay.

The Pracuúba rises in the forests to the south of the head-waters of the Atuhá and the Canaticú, and the Piriá in the marshy forests where also rises the Mapuá. Of this and of larger extension is the Canaticú, which to a great length is navigable for steamers and is the most important. Between the mouths of the Piriá and Canaticú is situated the flourishing village of Curralinho.

The rivers which follow the eastern and western sides of the island are of greater importance : the first, on the eastern side, cross the part of the island in which predominates the farming industry, and the last that in which the rubber industry is most developed and where is found a numerous population occupied in this industry.

Among these the principal are the Paracauary or Igarapé-Grande, on whose margin is situated the beautiful town of Soure; the Camará and the Arary.

THE ARARY.—This river rises in the large Arary lake, which by the Genipapucú communicates with the Tartarugas, and in a sinuous march follows a southeasterly direction. A little below the lake it receives, on the right margin, the waters of the Anajás-miry, lower down, in the middle of its course, and above the village of Cachoeira, which it washes, it receives the waters of the Goyapy. From this village downwards, the river narrows; but after reaching the banks of Moirim, it changes its course easterly, widening until it flows in an E. N. E. course to the bay of Marajó, leaving at its right the island of Sant'Anna do Arary.

During the summer, tidal influence shows itself only a little



above the Cachoeira, and during the winter the flow is hardly sensible above Moirim.

A singular fact happens in the commencement of this last-named season, which is, that the waters of the Arary run in two opposite directions: those of the lesser half towards the mouth, and those of the greater half run on to the lake of the same name, whence they recede as the lake fills up.

The ANAJÁS is the river of the greatest course and the mightiest in the island of Marajó. It rises in the central plain, in the same lowlands in which the Anajás-miry and Anabijú have their sources, and runs in a westerly to a northwesterly course, by a great number of canals, into the Amazon, and in the bay called Vieiras. In the right bank it receives two important branches: the Mocoões, which has its origin in the low lands of Acapú and follows a southwesterly direction, joining it in front of the village of Anajás; and the Cururú which, leaving the extreme west of the Mondongos, runs on to the west, receiving the waters of the Jurupucú and of the Jurará-paraná, and here returns to the south, joining the Anajás, below the island of Breu.

THE ARAMAN.—This is no more than a southern division of the Anajás, when this reaches the island of Breu. The general course is to W. S. W: its principal branch is the Mapuá.

#### *Canals.*

Indescribable are the series of canals where flow the rivers of Pará. Rivers and *igarapés* often cut, interrupt, bifurcate themselves, in a crossing so complicated that they form a real labyrinth, the importance of which, in relation to the hydrography of the region, is easy to estimate.

Withal, one should not omit to point out the small rivers and the more important bores; these are: the bore of Caldeirão and Paraná-miry of Bom Jardim, which unite the Jamundá with the Amazon, the Cachoeiry, which communicates this with the Trombetas, the bore of Salé, which, starting from the Amazon, in front of the island of Santa Rita of the district of Obidos, joins itself to the series of

lakes of the district of Villa Franca, and opens communication until in front of the island of Arapiry, belonging to Alemquer; the Paraná-mirys of Obidos, Alemquer, and Monte-Alegre, simple derivations of the Amazon itself; the bores of Ituquy and Mahicá in Santarem; the bores of Aquiqui and Urucuricaya, which give passage from the Amazon to the Xingú; the bores of Vieira, Vieirinha, Mututy, and Ituquara, between the islands of the mouth of the Amazon; the Tajapurú, Bore of the Company, Jaburú, Macacos, Aturiá, Bore of Melgaço, river of Breves, and Boiossú, to the west of the island of Marajó; the Bore of Pacajahy, which joins the river Anapú to Pacajá; the Bore of Campinas, which communicates the "Bay of Melgaço" with the "Bay of Boccas"; the canal of Anapú, which joins the Mojú with the Tocantins; the Bore of Arrozal, to the south of the island of Carnapijó; the Bore of Laura, which forms the island of Collares, and on whose margins are the settlement of Porto Salvo and the town of Vigia; and the Bore of Pagé between Curuçá and Marapanim.

Between the Caviana and Mexiana islands run the Canal Perigoso, and the Carapaporis or of Maracá in the coast of the Northern Cape lands, forming a western limit to the island of Maracá.

#### *Lakes.*

There are very few important lakes in this state; withal, in the western region corresponding to the districts of Monte-Alegre, Alemquer, Santarem, and Obidos, and in the lands denominated Northern Cape lands, there are a numerous succession; the greater part, however, of small dimensions, disappear in long dry seasons.

Among the first are: the Great Lake of Monte-Alegre, situated in the plains to the S. W. of the town of the same name, to the south and somewhat removed from the *serras* of Ereré, Maxirá, and Monte Grande, being twenty-five miles in length and three to five in width, and, as its dependants, the Piracaba to the west of the bar of the Maycurú River

and the Jacaré-capá to the southwest of the preceding, with which it communicates, and the Uxiacá to the S. W. of this last ; the Paracary to the S. E. of Alemquer, and accompanying the Tapará River to a great distance, to within three miles of its margin ; the Curumú, behind the town of Alemquer, the Curuá, and Bôtos, which mingle in one, near the left bank of the Amazon and below the division of the river Curuá ; the Tostão to the S. W. of this last, which accompanies the Paraná-miry of Obidos and, through the bores of Arraia and Suisso, communicates with the Amazon ; the Macará to the N. W. of the Bôtos, already near the highland, and as continuation of the Bore Mamaurú ; the Mamaurú near the mouth of this bore and of the *igarapé* (channel) Curuçambaua ; the Great Lake of Villa Franca, the Poção Grande, the Salé, and the Curumucury, on the left margin of the Amazon, in the plains of the district of Villa Franca, near the *serras* of Axicará, Aracury, Piraquara, and Curumucury—all connected and communicating with the Amazon by the bores of Curumucury, Irateua, and Muiratuba, crossing a gigantic forest from five to six miles in extent ; the lake of Salgado, on the bank of the river Cuminã ; the Arapecú, Jamarý, Mura, Xiriri, Parauacú, and many others on the bank of the Trombetas ; the lake Sapucuá, near the *serra* of Sapucuá and whose margins, it is said, were inhabited by the celebrated tribe of Amazonian warriors ; the Mariapixi, Urupaná, Algodoal, and Uruaná, all on the margin of the Jamundá, the Lago de Fáro, which washes the village of the same name ; and the Capixauaramonha, at the base of the *serras* of Dedal and of the Copo, formed by the meeting of the river Pratucú with the Jamundá.

In the lands of the Northern Cape the principal lakes are : the Novo, strewn with islands to the north of the mouth of Araguay ; the Piratuba, near the Northern Cape, and whence rises the river of the same name, which empties into the ocean ; Lake Jaca to the south of the bay of Maracá ; Lakes Comprido, Pracuúba, Culluxá, and Mapá, formed by the rivers Tartarugal, Frechal, and the *igarapé* of Serra which flows into the river Amapá, and whose margins France has

endeavored to occupy, establishing military posts, or missions of catechists.

In the centre of Maracá Island is found a lake of the same name, which merits special mention on account of its excellent fishing.

The island of Marajó also has a number, among which the Arary, the Tartarugas, the Santa Cruz, the Alçapão, the Aruans, the Guajará, the Socó, the Jacaré, are the most important. The Arary is the principal among them and has 18 kilometres of length from the N. to the S., and 4 of width, with a flat island, called Mãe Joaquina, in its northern point.

The depth of Lake Arary, which in summer varies from 1 to 2½ metres, in winter rises from 5 to 7, the water being very crystalline and zinc-colored in this season.

#### *Bays.*

Leaving the Gurupy mouth, and accompanying the coast of the continent to Tijóca Point, a large number of bays are to be found, viz.: Gurupy, Piriá-una, Piriá-tinga, Copuambaba, Cenamboca, Punga, Caeté, Marauafubá, Quatipurú, Japirica, Pirabas, Inajá, Arapepó, Salinas, Maracanã, Marapanim, Piracaimbaua, and Cajutuba. Almost all are the drains of other rivers of the same name, the Caeté being the largest among them, some of them offering excellent anchorages.

Between the Collares islands, the Pombas, Mosqueiro, and the continent lies the bay of Sol; and between this last island and that of Barreiras and Tatuoca is the bay of Santo Antonio. In front of the capital, with 12 kilometres of entrance, is the bay of Guajará, formed by the junction of the Guajará, Acará, and Mojú. Formed by the river Pará, extends and doubles with a considerable width and extension the beautiful bay of Marajó between the eastern side of the island of this name and the continent. Above it are found the bays of Pracuúba and the Bóccas, which terminate in the *bore* Paranaú. In the entrance of the Tocantins is found the wide bay of Marapatá.

Formed by the river Anapú are found the bays of Pracupy, where empties the river of the same name, and in its continuation that of the Castanhal, Cacujó, Caxiúna, and Camuhy; and by the waters of the Pacajá and Camaraipy, enlarged by the Acutipireira e Mocajatuba, is found the bay of Portel, with 49 kilometres of length and between 2 to 7 in width, in front of the village of the same name, receiving below the name of Melgaço Bay when in front of another village of the same name.

To the west of the island of Marajó the bay of Vieiras extends, and into this empty the Anajaz and the Charapucú, and in front of the town of Macapá the bay of Macapá.

In the district of Santarem, W. N. W. of this town, lies on the left side of the Tapajós the bay of Villa Franca, with beautiful coves on the north side, formed by that river and the Arapiuns.

#### *Islands.*

The description which we have given of the large hydrographic system of this valley, leaves to the imagination the different number of islands, which are to be found in the state, whether along the coast, or strewn about in the rivers. The principal ones are, the :

ISLAND OF MARAJÓ.—Of old, this island was denominated the Nheengaibas, because of the different and difficult languages spoken by the Indians which inhabited it. This name was afterwards substituted by the one of Great Island of Joannes, until *Marajó* was applied, primarily to its meridional part.

The island of Marajó occupies a surface of nearly 42,000 square kilometres, corresponding to 96 miles N. to S., and 127 E. to W.; and in this are situated the towns of Soure, Breves, and Chaves; the villages of Muaná, Curralinho, S. Sebastião da Boa-Vista, Monsarás, Cachoeira, Ponta de Pedras, Anajás, and Affuá, besides the settlements of Salvaterra, Monfort, Condeixa, and Trovão.

The island of Marajó is naturally divided into two distinct sections, one to the *campos* to the N. and E., and the other to the forests, W. and S., in a manner that, suppose an imaginary line to be drawn from the mouth of Cajuúna, and terminating in the mouth of Atua, thus could be established more or less a separation of the two sections; the first applied to cattle raising, where exist nearly 300 estates, and the other to the extraction of rubber.

Ferreira Penna, who deserves to be always quoted, describes in the following manner the coasts of the island of Marajó:

"The coasts of the island differ among themselves, according to the waters which bathe them, and thus on the coast or margins of the west are only found lowlands, muddy and clayey, and on the same coast, N., blown over by winds, it presents a reddish, sandy appearance. This sand becomes hard cemented by clay, forming shallow lakes, over which the waves of the river roll and are torn in pieces.

"Both coasts are bathed by the Amazon.

"The southern and northern coast, on the contrary, chiefly from the bars of the Tocantins down, is distinguished by the frequent presence of stones (coarse and ferruginous sandstones), and beautiful banks of snow-white sand; but what above all distinguishes the difference noted, is that the eastern coast, in a longitudinal band which does not exceed 3 miles in its greatest width based over the reefs, elevates itself, with some interruptions, to a superior height to the general level of the island; withal this elevation does not reach a sufficient height to form a hill."

CAVIANA and MEXIANA are the names of the two large islands which to the north of the preceding are found in the mouth of the Amazon, cut by the line of the equator, the first to the S. and the other to the N., and where great *campos* for cattle raising are also found, and to the industry of which they are applied.

The Caviana measures 47 miles in its greatest extension E. and W., and 30 to the N. and S.; and the Mexiana 27 miles E. to W., and 24 N. to S.

A canal 7 kilometres in width, which is called the Perigoso canal, separates the two islands.

ILHA GRANDE DE GURUPÁ.—This is the most extensive of the islands situated in the estuary of the Amazon, commencing in the heights of the bar of Xingú and reaching until near Mazagão, frontier of the bar of the river Maracá, with an expanse of 78 miles S. W. to N. E. and 29 east to west.

This island separates the mouth of the Amazon into two great branches, the western accompanying the continent, and the eastern, which receives the waters of the Xingú, washing the coast of the island of Marajó.

To the N. and E. of the island of Gurupá the number of adjacent islands is considerable, all of them of great importance, on account of the richness of their rubber forests.

We should note among them the islands of Porcos, Pará, Conceição, Cavallos, Maracujá, Caldeirão, Pracuúba, Pracuúbinha, Mututy, Roberta, Aranahy, Baquiá, Urutahy, and Gurupá. The island of Santa Anna to the N., in the mouth of the river Matapy, is celebrated in Pará history by the important figure which it represented, being the theatre of the great combats between Portuguese and Dutch, when they mutually disputed the possession of that opulent region.

On the coast of the Amazon are noted the islands of Curauá, Brigue, Bailique, and other smaller ones; and farther on above the Northern Cape is found the island of Maracá, 26 miles in extension N. to S. and 20 E. to W.

Numberless are the islands situated to the west of the island of Marajó and formed by the network of canals, which we have described; we should withal quote among them the islands of Anajás, Jacaré, Curumú, Tajápurú, Mutumquára, Aramá, Jaburú, Macacos, islands of Companhia, Aturiá, and Pracachy; and farther on above the bay of Portel, the island of Pacajahy with 23 miles of extension and 9 of width N. to S.

In front of the capital is the island of Onças, which limits the bay of Guajará; and after that follows Arapiranga, Carnapijó, Cotijuba, and Tatuóca, which during the revolution of 1835 was the seat of the Pará Presidency.

Accompanying the coast to the mouth of Gurupy are found the island of Barreiras; that of Mosqueiro, where to-day is found a flourishing settlement; that of Pombas; Collares, in which lies the village of the same name; Tijóca, Cajutuba, Marapanim, Taquiry, Maiandeua, Praia Grande, Caeté, Northern Island, Punga, Preatinga, and Manegituba.

In the Tocantins should be mentioned the islands of Araraim, Paquetá, Juaba, Marariá, Bacury, Jutahy, which is the largest of them; the Guaribas, where is the first waterfall; the Tocantins, Areião, Valentim, and the Rainha Island.

In the mouth of the Xingú are found Cujuba, Urucurycaia, Macacos, Tapará and Aquiqui.

Thence forward along the Amazon are worthy of note the islands of Comandahy, Jurupary, Paranáuara Uruará, Itanduba, Frechal, Barreiras, Ituqui, islands of Tapará, Arapiry, Marimarituba, island of Printes, Capella, Santa Rita, islands Maracauassú and Juruty.

In the Tapajós also are found a great number of islands, all, withal, of straitened dimensions, and the greater part in the upper course. The island Copary, in front of the settlement of Aveiros, is nearest the mouth.

*Coast, Capes, and Lighthouses.*

In all Brazil, Pará is the state which has the greatest line of sea-coast, its length from Orange Cape to the mouth of Gurupy measuring nearly 700 miles. Only four large capes advance toward the ocean, without counting the small points of outjutting land comprised between said river and Tijoca Point. They are: the Maguary, to the northeast of the island of Marajó; the Northern, in the extreme east of the coast of Carapaporis; the Cassiporé, to the right bank of the mouth of the same name; and the Orange, in the same side of the mouth of Oyapoc.

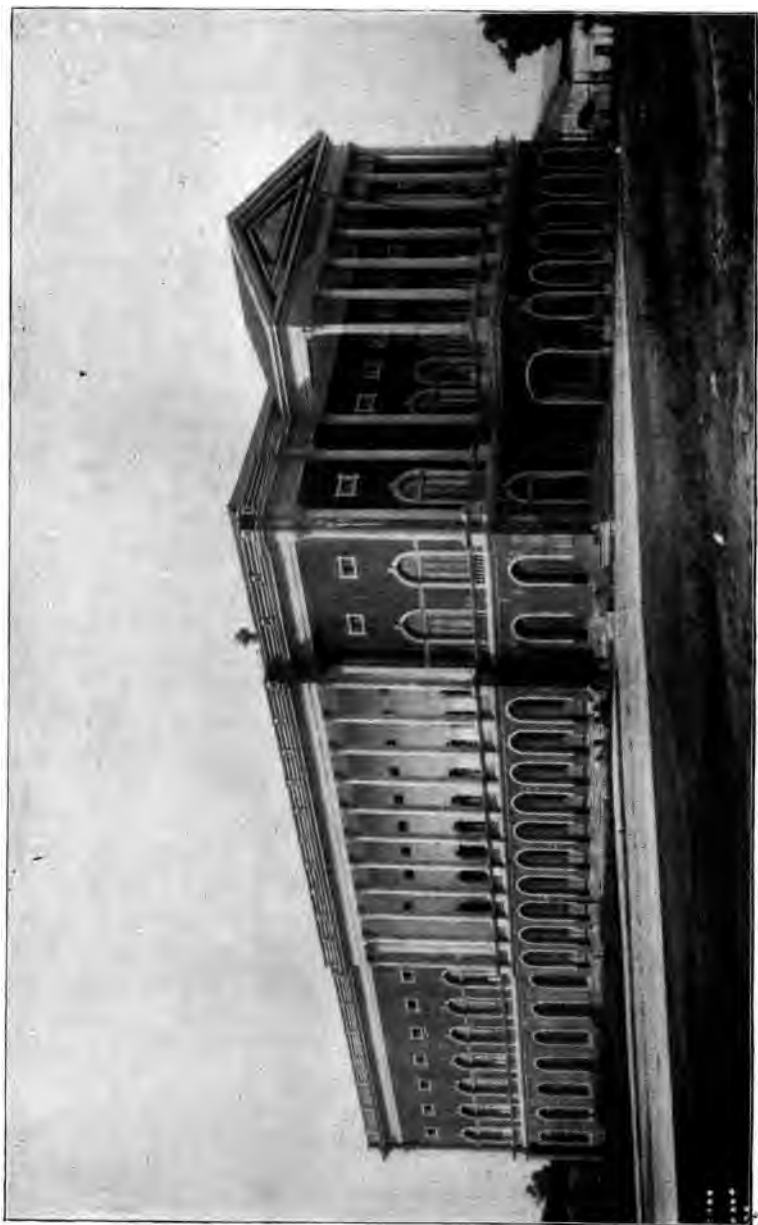
Both on this coast as on the river bars are found various lighthouses, which give free entrance to the river bars. The principal are: the Salinas lighthouse at Atalaya Point,  $0^{\circ} 36' 2''$  S. lat. and  $4^{\circ} 12' 24''$  of long. W. of Rio de Janeiro, diop-



tric of the 3d order of light, reaching 31,500 metres, with lenticular implements of the system Fresnell and Arago and a clear light of equal duration lasting 70 seconds ; the Bragança lighthouse fluctuating in the banks of the same name, 14 fathoms deep, catoptric, fixed, reaching 14,800 metres, and dissipating light by eight lamps with reflector disposed in a circle ; and the lighthouses, dioptric of the 6th order, of Chapéo Virado at  $1^{\circ} 5'$  of S. lat., and  $5^{\circ} 19' 54''$  W. long. ; that of Collares at  $0^{\circ} 53' 30''$  S. lat. and  $5^{\circ} 7' 48''$  W. long. ; that of Forte da Barra at  $1^{\circ} 20' 30''$  S. lat., and  $5^{\circ} 20' 48''$  W. long. ; that of Cotijuba at  $1^{\circ} 13' 15''$  S. lat. and  $5^{\circ} 26' 0''$  W. long. ; that of Soure at  $0^{\circ} 40' 42''$  S. lat. and  $5^{\circ} 19' 45''$  W. long. ; that of the island of Capim at  $1^{\circ} 35'$  S. lat. and  $5^{\circ} 42' 44''$  W. long. ; that of the island of Goiabal at  $1^{\circ} 39' 33''$  S. lat., and  $6^{\circ} 0' 08''$  W. long. ; that of Jutahy at  $1^{\circ} 51' 15''$  S. lat., and  $6^{\circ} 40' 0''$  W. long. ; and finally the Marianno at  $1^{\circ} 47' 30''$  S. lat. and  $7^{\circ} 8' 30''$  long. W. of Rio Janeiro, all with fixed light reaching 13 kilometres.

**PART III.**  
**PUBLIC INSTRUCTION.**





THEATRE OF PAZ.

44



## PUBLIC INSTRUCTION.

Public instruction in the state of Pará comprises :

Primary instruction.

Secondary instruction.

Normal instruction.

Technical and professional instruction.

Primary instruction is given :

In the elementary schools.

In the primary school.

In the Orphan (Amparo) Asylum.

In the Institute of Mechanical Arts, and in those establishments which through their nature and category distribute the so-denominated instruction.

Secondary instruction is given at the Pará Lyceum, in a course of sciences and letters exacted for the matriculation of the superior courses of the Republic.

Normal instruction is furnished in the respective normal schools, for the preparation of primary teachers of both sexes.

Professional instruction is given in the Institute of Mechanical Arts in two courses: that of surveying and of book-keeping, annexed to the Pará Lyceum; in the Lyceum *Benjamin Constant*, which is a night school, maintained by a private association, aided by the state government.

Each of these establishments, with the exception of the primary schools, is directed by a special regulation, in accordance with the rules and principles of the general regulation.

All the establishments named are subjected to the general directory of state instruction.

The teaching is secular ; that of the primary, gratuitous and not obligatory.

Private instruction is entirely free and independent. Any person, foreign or native, can open an educational establishment, subject only to the following conditions :

1st. A previous communication with the Director General of Public Instruction, declaring the names of the proprietor and director, denomination and locality of building.

2d. To present within the space of eight days, whenever it may be required, a minute table of the membership and attendance of each pupil, giving nationality, age, class, and course.

3d. To report annually, between the dates of the 10th and 20th of December, a table of the annual statistics of the school as specified in paragraph second.

4th. To produce certificates of the sanitary condition of building and grounds, testified to by competent authority.

Outside of this requirement, exacted by the necessities of instruction, and hygiene, the general directorship of public instruction has nothing to do with private schools not receiving government aid.

The non-fulfilment of the above conditions leads, for the first offence, to a fine of one hundred mil reis (100\$000), or at present exchange about twenty-four dollars (\$24.00) ; the second, to a fine of double the amount ; and in case of a final non-compliance with the law, the establishment is closed.

#### ORGANIZATION OF PRIMARY INSTRUCTION.

Primary instruction is divided into elementary and advanced.

Elementary instruction, given in the elementary schools, comprises :

1st Concrete instruction of forms, colors, numbers, dimensions, time, sounds, quality of objects ; weights and measures, their use and application.

2d. Practical geometry and rules for the measurement of areas and capacities.

3d. Reading and writing.

4th. Practical teaching of the mother tongue, the concrete construction of phrases and orthography meriting attention above all.

5th. Practical arithmetic, comprising the four fundamental processes, common and decimal fractions, the metric system, proportion, rule of three, interest, concrete problems reduced to a formula.

6th. Geography of Brazil, and a general idea of universal geography.

The course of the elementary schools lasts for at least three years.

Advanced instruction is given in the primary schools.

The courses of these schools are obligatory for six years, two being for the elementary course, two for the middle, and two for the superior or final course.

Instruction in primary schools comprises :

*Elementary Course.*

1st. Concrete teaching of forms, colors, numbers, dimensions, time, sounds, qualities of objects ; measures, their use and application ; brief object lessons.

2d. Reading and writing.

3d. Practical teaching of the mother tongue.

4th. Practical arithmetic, as far as long division ; easy problems always concretely reduced to a formula.

5th. Moral culture, with moral comments upon the narratives in the reading-book and incidents of school life.

*Middle Course.*

1st. Reading and writing ; dictation.

2d. Portuguese reading, practical grammar read, and in the first year largely explained and exemplified. In the second year the first theoretical rudiments of the language practically taught by intuitive method. Construction of phrases.



3d. Scientific presentation of objects ; the three natural kingdoms, their distinctions, and the general uses which man makes of the different elements which belong to each.

4th. Practical arithmetic to the rule of three ; metrical system. Practical calculations and concrete problems ; practice of the metrical system.

5th. Practical geometry. Practical construction on the blackboard of the plain figures. Practical measurement of areas and capacities.

6th. Geography. Topographical study of the school and its situation, passing thence to the locality and afterwards to the municipality, indicating not alone physical conditions but dwelling also on the population, administration, productions, commerce, and industry. The first elements of map drawing, physical, political, and economic geography, of the state ; general ideas of the physical geography of the earth.

7th. History of the country ; reading by pupils, with commentaries and explanation by teacher, afterwards repeated by them. Biography of illustrious Brazilians of the colonial epoch.

8th. Moral culture, moral observations and comments upon school life and facts of practical schooling.

#### *Superior Course.*

1st. Select readings and criticisms of the best Brazilian authors. Declamation, alternately prose and verse.

2d. Exercises in composition and style ; theoretic-practical study of Portuguese grammar ; parsing according to the methods of relations, discarding the old classifications.

3d. Practical and theoretical arithmetic, as far as square and cubic root, excluding the logarithms.

4th. Geometry ; study of solids, representation of the solids on the blackboard.

5th. Object lessons, ideas of practical science ; reading and comments on selected works ; examination of specimens and objects appropriate to these lessons chosen by teacher or pupil.

6th. Universal geography ; general ideas of physical geography and political, especially of America.

7th. Practical geography ; general study of physical geography, economic, and political of the country. Frontiers ; physical and economic studies of the principal fluvial basins. Study of each separate state. Drawings on the blackboard of charts, especially those of Brazil.

8th. History of Brazil until the time of the downfall of the monarchy.

9th. Civic culture ; reading and explanation of the Federal Constitution, and that of the state.

10th. Moral culture ; observations over facts of scholastic life, of practical life and of history. Exposition of man's chief duties to his country, to his fellow-citizens, and to humanity. Ideas and practical expositions of the social and human responsibility ; precepts of good breeding.

In addition to these subjects, during the entire course, physical education is thus given :

1st. Practical ideas of hygiene, respecting alimentation and clothing, the house, exercise, and distribution of time for labor and repose.

2d. Neatness and order recommended and exacted.

3d. Physical exercise in marching, leaping, and other calisthenic exercises made during recreation.

4th. Games and plays in the open air.

Twice a week, in the girls' schools, during those days designed for physical exercise in boys' schools, the last hour is employed in plain and ornamental needle-work ; preference being given to the cutting and making of men's and women's garments and to plain needle-work.

The state schools have daily classes, from half-past seven in the morning until midday.

Besides the general vacation (November 15th to January 15th), there are no other holidays excepting Sundays and those appointed by the law of the state and the Union.

In the primary schools, classes open on the 16th of January and close on the 14th of November.

The general directory of public instruction distributes

minute plans and pedagogical observations over each subject of the programme, as well as over the distribution of time and labor.

It is illegal for any teacher to alter said programmes, although he may be permitted to criticise them, offering such considerations as time and experience have taught him.

There exist in the state 412 public primary schools, 266 for boys and 146 for girls. In Belem, the capital, are 13 for boys and 32 for girls. Besides these, there are for adults 5 primary night schools, maintained by various municipal administrations in the capital and the interior.

Outside of these are in the capital 51 private establishments of primary and secondary instruction; of these, 27 being primary and 2 secondary for girls, and 24 primary and 6 secondary for boys.

The Amparo College, above mentioned, is a boarding-school designed for destitute orphan girls, who therein receive gratuitous primary instruction, domestic education, food, clothing, and, when they marry, a wedding outfit and a small dowry.

There are under these conditions nearly 200 girls.

This establishment has a special directorship, composed of philanthropic men, who provide a situation for these girls if they do not marry, when, having concluded their studies, they are obliged to leave the college.

All expenses connected with this poor children's asylum are defrayed at the cost of the state treasury.

#### SECONDARY AND PROFESSIONAL INSTRUCTION.

The state department maintains at the capital a day-school for secondary instruction, called the *Pard Lyceum*, whose aim is the gratuitous offer of a fundamental intellectual culture, necessary, not alone for the matriculation of the superior courses, but for the fulfilment of social duties.

Instruction at the *Pard Lyceum* comprises three courses, to wit:

1st. *Advanced course of letters and sciences*, organized according to the plan of instruction of the National Gym-

nasium of the Federal Capital (Decree of the Provisional Government, No. 981 of 8th Nov., 1890).

2d. *Course of surveying*, with the studies indispensable to the exercise of this profession.

3d. A *commercial course*, which more particularly instructs the pupil in book-keeping.

The advanced course of letters and sciences, according to the plan of the National Gymnasium, is divided into a course of seven years; that of surveying, in one of three years; and the commercial, in one of two years.

The first only is subject to the subsequent modifications adopted by the said gymnasium; the last two are augmented or diminished at the will of the government, according to the needs of the respective instruction.

The course of letters and sciences is principally a theoretical one, practical only in the subjects which it exacts; that of surveying is equally theoretical and practical; the commercial, above all, is practical, aided by theories indispensable to its progress.

General instruction at the *Parv Lyceum* comprises the following subjects:

#### *Sciences.*

- 1st. Arithmetic.
- 2d. Algebra.
- 3d. Geometry.
- 4th. Trigonometry.
- 5th. Mechanics.
- 6th. Astronomy.
- 7th. Physics.
- 8th. Chemistry.
- 9th. Meteorology.
- 10th. Mineralogy.
- 11th. Geology.
- 12th. Zoölogy.
- 13th. Botany.
- 14th. Biology.
- 15th. Geography.

- 16th. Universal history.
- 17th. Sociology and morals.
- 18th. Legislation of lands.
- 19th. Topography.
- 20th. Book-keeping and commercial calculations.

*Letters and Arts.*

- 21st. Portuguese.
- 22d. French.
- 23d. English.
- 24th. German.
- 25th. Latin.
- 26th. Greek.
- 27th. Brazilian literature.
- 28th. Drawing.
- 29th. Music.
- 30th. Gymnastics, military evolutions, and fencing.

There are laboratories and cabinets, indispensable for practical experiments required in the three courses.

Also in the *Pard Lyceum* is a special library, in which will be found the most important compendiums, treatises, maps, reviews, for the consultation and higher studies of lecturer, professor, or student of the establishment.

## ADVANCED COURSE OF LETTERS AND SCIENCES.

The advanced course of letters and sciences of the *Pard Lyceum* counts the following chairs :

- Portuguese.
- Latin.
- Greek.
- French.
- English.
- German.
- Elementary mathematics.
- General geometry, calculus, and descriptive geometry.
- Mechanics and astronomy.

Physics and chemistry.  
Geography.  
Meteorology, mineralogy, and geology.  
Biology.  
Sociology and morals.  
Universal history.  
History of Brazil.  
Brazilian literature.  
Drawing.  
Gymnastics, military evolutions, and fencing.  
Music.

These branches form a seven-years' course.

*Surveying Course.*

Indispensable to this course are the following :

Portuguese.  
French.  
Arithmetic.  
Algebra to equations of the second degree.  
Preliminary geometry and rectilinear trigonometry.  
General geography, cartography, and cosmography.  
Legislation of lands.  
Topography.  
Practice of instruments (*sea-compass, transit, theodolite, tachometer, levels, etc.*).  
Lineal and topographic drawing.

The above are comprised in a three-years' course.

*Commercial Course.*

The commercial course of the *Pard Lyceum* comprises the following subjects :

- 1st. Portuguese.
- 2d. French.
- 3d. English.
- 4th. German.

- 5th. Arithmetic.
- 6th. Commercial geography.
- 7th. Mercantile book-keeping.
- 8th. Commercial calculation.
- 9th. Commercial practice.

These subjects comprise a two-years' course.

From the 2d to the 31st of January of each year is open in the Secretary's office, the register for the different courses and years of this establishment.

No pupil can register his name without an application from his father, guardian, or some person fully authorized or legally responsible for same.

Inscription in separate classes is permissible, subject, however, to the logical order of subjects, and to conformity with the above dispositions.

With the special permission of the Director General, heard by the Lyceum, separate inscriptions can be prolonged until the 15th of March to those only who can prove the impossibility of registration in January.

Such pupils, both for the regimen of the classes and examinations, are of equal rank with those who receive the first lessons at the beginning of the year.

The classes open on the 15th of January and close on the 15th of October of each respective year.

Daily classes and studies begin at eight o'clock in the morning, and are prolonged to the hour annually approved by the Board of Professors, and which is published in the official papers.

In the advanced course of letters and sciences are three series of examinations, namely: *the preparatory, the final, and the graduating*; and in the other two courses, only the first two series.

*1st Series.—Preparatory Examinations.*

These examinations comprehend the subjects studied during the first year, and which are to be subsequently continued. They commence at the close of classes, and consist only of oral examination which is publicly given.

*2d Series.—Final Examinations.*

These examinations comprise the subjects concluded and are made to follow the conclusion of the preparatory, preceded by a previous three-days' notice. They consist of oral and written exercises and practice in the subjects exacted; the first examination being private, under the inspection of the examiners, and the others public.

The final examinations are of :

- I. Arithmetic and algebra, at the end of the first year.
- II. Portuguese, geography and cosmography, geometry and trigonometry, at the end of the second.
- III. French and Latin, calculus and descriptive geometry, at the end of the third.
- IV. Mechanics and astronomy, at the end of the fourth.
- V. English, German, and Greek, physics and chemistry and music, at the end of the fifth.
- VI. Biology, meteorology, mineralogy, geology, and drawing, at the end of the sixth.
- VII. Sociology and morals, universal history, history of Brazil, history of national literature, gymnastics, military evolutions, and fencing, at the end of the seventh.

To the final examinations of the *Pard Lyceum* outside candidates can present themselves, provided they ask, during the month of October, permission from the Director, declaring the course in which they desire to pass said examination.

*3d Series.—Graduating Examinations.*

These examinations are made at the end of the advanced course of letters and sciences, and are destined to verify if the pupil possesses the necessary intellectual culture.

The time for these examinations is marked by the Director General.

To them can only be admitted pupils of the Lyceum who have been approved in all *final examinations*.

They consist of written and oral examinations in each of the following sections :



- 1st. Living languages, especially the Portuguese, and national literature.
- 2d. Dead languages.
- 3d. Mathematics and astronomy.
- 4th. Physical science and its application; meteorology, mineralogy, and geology.
- 5th. Biology, zoölogy, and botany.
- 6th. Sociology and morals, outlines of national law and political economy.
- 7th. Geography, universal history, especially of Brazil.

Besides these, there is also a practical examination of the studies of sections 4th, 5th, and 7th.

To these examinations may be admitted any candidate outside of the establishment, who may wish to profit by the guaranties and privileges conceded to this establishment under the condition of :

- (a) Petition to the Director General.
- (b) Attached to this petition a certificate from a professor of acknowledged competence, or from a director of a private college, proving the candidate's qualifications in the subjects of the required sections.

On the candidate who obtains in the graduating examinations of the *Pará Lyceum* two thirds of full approvals, is conferred the degree of *Bachelor of Letters and Sciences*.

The student approved in all the subjects of the surveying course receives a *Surveyor's Diploma*, conferred by the *Pará Lyceum*, with which he can exercise this profession in all the states, and use publicly the title of surveyor.

The *Pará Lyceum* also confers a *Certificate of qualification* on the student fully approved of in the subjects of the last year of the commercial course.

The government besides subsidizes two establishments of the secondary class in the two cities in the interior of the state, viz., in SANTAREM, on the right bank of the Tapajós River, and in CAMETÁ, on the left bank of the Tocantins River. This last establishment is not yet in operation ; the

first, however, has been in existence for nearly two years and comprises the following scholastic programme :

- Portuguese.
- French.
- English.
- Latin.
- Arithmetic.
- Algebra.
- Geometry.
- Trigonometry.
- General geography and cosmography.
- Universal history.
- Chorography and history of Brazil.
- Drawing and music.

The second establishment which is in process of installation at Cameté will have the same programme.

**NORMAL SCHOOL.**

Under the form of a day school the government maintains at the capital of the state a *normal school*, which has for its aim the preparation of professors of both sexes for the teaching of the primary course.

The normal course comprises the following subjects all obligatory :

- The national language and literature ; a critical study of its standard works and expressive reading and comment on the text.
- French.
- Elementary mathematics, comprising arithmetic, elementary algebra, and preliminary geometry.
- General geography, chorography of Brazil, cartography, and cosmography.
- Universal history, especially that of Brazil, and particularly of Pará.
- General pedagogy, methodology, and school hygiene.
- Physics and chemistry.
- Natural history : mineralogy, botany, and zoölogy.

Moral and civic instruction.

Outlines of law and political economy ; study of the  
Constitution of the Union and of the state.

Caligraphy.

Drawing.

Music.

Needle-work for girls.

Gymnastics.

All these subjects comprise a four-years' course.

The course of national language and literature has especially for its object the inspiration of the sentiment for *vernacular purity* ; and, through a critical study of the best works on the literature of our language, the taste for a good style.

History particularly is directed towards civic education.

The teaching of sciences, always explained by observation and experiment, is above all conducted as a fortifying discipline and educator of the understanding, familiarizing it practically with the best methods of investigation and scientific demonstration.

Instruction in drawing has for its aim the education of the senses, the faculty of observation, and an artistic taste, affording to the student at the same time the usual and ready means of experience and concentration of thought.

Instruction in geography employs the utmost care in cartographical exercises, be they made on paper or on the blackboard.

Moral instruction, reduced to the minimum of theory, is essentially practical and pedagogical. Through its means the right cultivation of the infant pupil's mind is above all sought and maintained.

Cabinets and laboratories are created indispensable to the practice of natural and physical sciences.

There are also two primary-model schools, one for each sex, for practice of pupil-teachers in the art of teaching.

Also a library, gradually and progressively organized, exists, where students and professors may consult in their studies the more important works, maps, reviews, etc.



Normal teaching is gratuitous and secular.

From the 2d to the 31st of January, of each year, is open at the secretary's office the register for each course and each year.

With the permission of the Director General, heard by the director of the establishment, registership can be prolonged until the 15th of March, it having been proven impossible in January.

The classes open the 15th of January and close the 31st of October of each year.

Daily labors commence at eight o'clock punctually in the morning and are prolonged to the hour approved by the Board of professors.

Examinations commence on the third day after the close of the classes.

They consist of oral and written examinations, and practical on those subjects that exact it.

#### TECHNICAL TEACHING.

Also at the expense of government is established a free boarding-school for minors, under military conditions, where gratuitous instruction in mechanical arts is given.

This establishment is called *The Pard Institute of Mechanical Arts*, and contains 130 pupils.

There are five work-shops, viz. :

That of—

The joiner and turner.

The blacksmith and locksmith.

The tailor.

The tinsmith.

The shoemaker, tanner and currier.

When the pupil's education is finished, he serves for two years in the state militia, obtaining afterwards his discharge or promotion.

The government subsidizes one periodical—*The Review of Teaching and Education*,—which is published monthly in the capital.



**PART IV.**  
**PUBLIC REVENUES AND COMMERCE.**





AVENUE OF THE REPUBLIC, WITH THEATRE OF PAZ.





## STATE EXCHEQUER.

### ADMINISTRATION.

The administration of the state exchequer, according to the terms of the Constitution, belongs to the governor, and is exercised through means of the Public Treasury of State, which acts as a tribunal or administratively.

In the first case, this is represented by the Board of the Treasury, composed of the Inspector, the Accountant, and the Attorney-Solicitor of this department, and in this manner: by directing and inspecting the state receipts and expenditures, examining collection of taxes, distribution and accounting for the public revenue, and deciding as to the justice of decisions of the fiscal department.

Administratively the Inspector represents the Treasury; decides administrative questions; indicates improvements and reforms in the collection of taxes or tributary system; executes the financial legislation decreed by Congress and sanctioned by the governor; promotes in every possible manner the financial interests of the state commonwealth.

It is the centre of the administration of Exchequer, and subordinate to it: in legal administration, the Collecting Department of the public income of the state, and those public departments which receive state contributions or income, and the collectorships, which, in the interior, are special agencies to facilitate the collection of taxes.

### PUBLIC REVENUES AND EXPENDITURES.

The public receipts comprise:

The municipal income.

The state income.

The first is decreed by the municipal councils, and is col-

lected by their agents, attorneys, or by permission of the governor by the Collecting Department, and is designed for municipal expenses.

The second, voted by Congress and with the sanction of the governor, is collected at the Collecting Department, collectorships, and also different public stations.

The state income in the financial term of 1838 to 1839, the first directed by a legal budget, after the bloody political revolution of the *Cabanagem*, amounted to \* 230:799\$534, and the expense 133:783\$489, increased, in 1851, before the separation of the territory of the old district of Rio Negro, which afterwards passed into the province of Amazon, to 273:329\$980 and the expense to 244:421\$037.

Then, not alone on account of this separation, but also on account of the dismemberment of the territory which constituted the term of Turyassú, the income rose, in 1852, to 295:201\$819, increasing from then till now, with far greater development, certainly owing to the innumerable benefits, brought about by steam navigation, begun on the Amazon, and its branches, and to-day extended to nearly all navigable rivers.

The first financial periods after the commencement of steam navigation were severe trials to Pará, scourged by cholera and subsequent depression in all its branches of commerce and industry; yet, withal, public income continued to increase, reaching in 1861 to the receipt of 579:807\$891, the expense being 567:288\$058, notwithstanding the slight commercial intercourse between Pará and the United States of America, which, at that date, was the principal consuming market of our rubber.

It is worthy to note the development attained by the Pará state income.

The balance sheets show the following:

In 1861	.	.	.	.	.	579:807\$891
" 1871	.	.	.	.	.	1,642:323\$731
" 1881	.	.	.	.	.	2,477:551\$553
" 1891	.	.	.	.	.	3,954:913\$669

\* 1\$000 (one thousand reis) equals about 50 cents, at par rate.

not including in this last year the income derived from taxes, belonging until July to the general government, and which passed from the 6th to the 12th of this month to constitute the state income, in accordance with the new organization of the country.

The receipts and expenditures in the last decade were :

In 1881-1882	2,913:261\$183	3,480:308\$053
1882-1883	3,107:683\$464	2,572:005\$564
2d half-year 1883	1,974:850\$692	1,254:599\$847
1884	2,299:187\$806	2,929:637\$851
1885	2,807:929\$820	2,964:014\$222
1886	3,181:247\$599	3,187:909\$249
1887 estimated	3,960:630\$000	3,700:521\$169
1888	3,205:230\$494	3,622:202\$516
1889	2,806:074\$634	3,089:094\$701
1890	3,140:162\$144	3,313:083\$752
and in 1891	5,938:154\$818	5,772:044\$994

including in the receipts the sum of 1,983:241\$149, collected from the new state taxes; and in the expenditure that of 1,172:633\$747, expended upon new obligations contracted by the state, according to terms of the Federal Constitution; it being worthy of note that the state delivered to the municipal council of Belém the income derived from house-taxes, which in 1891 reached the amount of 298:830\$955.

For the collection of such an important sum, the State Collecting Office contributed :

In 1861	. . . . .	449:115\$425
" 1871	. . . . .	1,236:135\$220
" 1881	. . . . .	2,046:073\$304
" 1891	. . . . .	5,529:110\$424

The legislation concerning the fiscal laws has been all reorganized, and the government has been discriminating between the incomes and obligations of the state and of the municipalities; self-governed in the form of the Pará Constitution.

The Decrees Nos. 415 of the 26th and 418 of the 28th of October, 1891, which promulgated new regulations and new taxes for the collection of export duties and industries and professions, modified sensibly the fiscal process and diminished duties, which will little by little disappear, in conformity with the development of other incomes.

It is the intention of government to substitute as quickly as possible export duties by land-taxes; such an important service, difficult and delayed, must be very carefully studied and prepared, in order to be able to commence the organization of cadastral plans—base for the imposition of this tax.

#### PUBLIC DEBT.

In the day of the proclamation of the Republic in Pará, the state of public debt was the following :

The fluctuating debt amounted to	1,432:463\$563
The consolidated debt, consisting	
of bonds at interest of 8 % .	1,164:200\$000
Of bonds at interest of 6 % . .	2,215:400\$000
	<hr/>
	4,812:063\$563

The last President but one of Pará in his report, presented the 18th of September, 1889, to the Provincial Assembly, referred to the deplorable financial conditions of the province; conditions which he attributed to the imprudence which presided over the organization of the budget, whose *deficit* he calculated to be over two thousand contos of reis, and the heavy obligations contracted in one continuous series of onerous contracts.

“The impossibility of satisfying,” said he, “the obligations which these contracts throw upon the Province, brings the consequent depreciation of its bonds, provoked by the just clamors of creditors, who demand punctuality in their payments.”

To do entire justice to this citizen, we should say that he tried in vain to arrange, under acceptable conditions, a loan for the consolidation and conversion of the debt.

Actually the state has no fluctuating debt, and the condition of public edifices almost ruined, has considerably improved.

An edifice appropriated to the official press has been constructed, also a large lunatic asylum, and large loans to different municipalities have been made; titles of public debt enjoy entire credit, because of the guaranty they offer and the punctuality of their payment of interest.

The actual consolidated debt amounts to 4,528:800\$000, distributed as follows :

Government bonds of 5 % . . .	107:400\$000
"      "      " 6 % . . .	772:400\$000
Balance of loan of 6,500 contos of reis, raised in 1890 from the Bank Lavoura e Commercio, payable in thirty years . . .	3,649:000\$000
	<hr/>
	4,528:800\$000

On the 2d of January, 1893, the balance sheet at the Treasury showed in hand the sum of . . . . 5,480:576-\$813, belonging :

To the Treasury . . . . .	3,607:360\$669
Several deposits . . . . .	1,873:216\$144

The amount paid in the State Collecting Office during 1892 rose to 7,829:931\$664, or more than three thousand contos of reis in excess of the calculation noted by Congress, if to the first-mentioned sum be added the amount collected by other fiscal stations.

The export duties, which had been calculated at 3,801:653\$000, brought in 6,676:305\$281, or an excess of 2,874:652\$281; those for landing of goods, an excess of 10:142\$488; and those on stamps nearly two hundred contos of reis.

A prudent and careful calculation of the receipts during the financial year, even counting on a heavy decline in the prices of our principal products, estimates the revenue of

the state at 7,153:278\$000, without including the existing balance.

All tends to the belief that, shortly, the debt of the state will be completely paid.

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### COMMERCE.

THE state of Pará, through its geographical position, through its considerable number of navigable rivers—navigable to incalculable distances,—constitutes ways of easily opened communications between the capital and its interior, as well as the bordering states and republics. It is thus the necessary emporium of the most important commerce of North Brazil.

Part of the interior of the states of Maranhão and Goyaz, of the republics of Peru, Bolivia, and Venezuela, send their products to be sold and obtain their supplies in the commercial exchange of Pará.

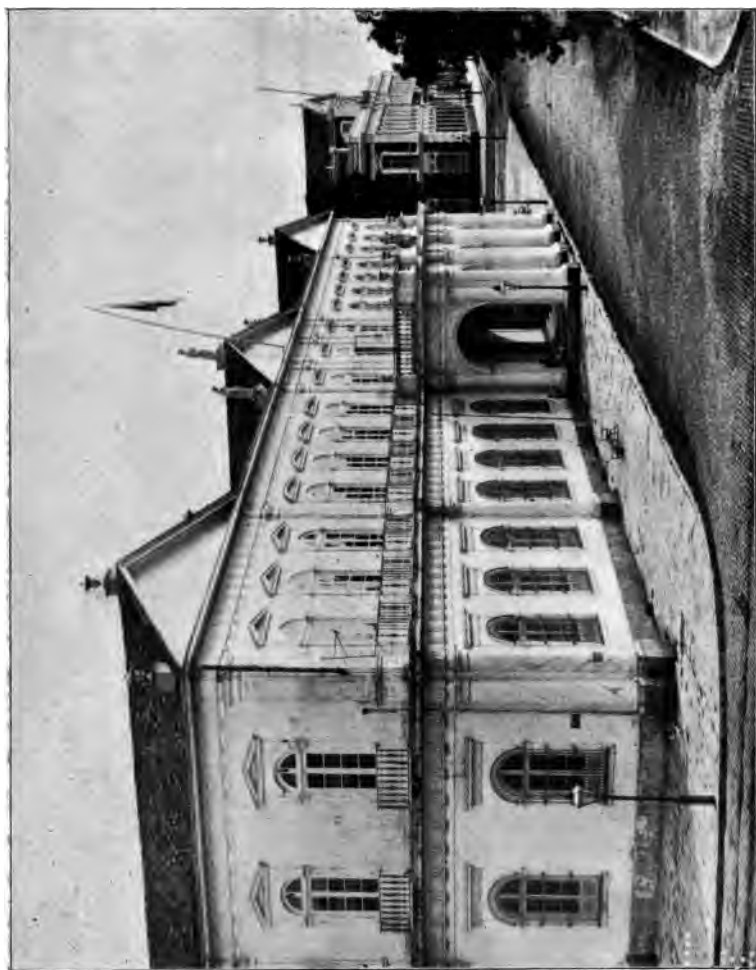
Not of long date are the progress and development of Pará commerce. A sort of feudal spirit of monopoly exercised by the Jesuits restricted for a long time this commerce, which commenced weak and unprotected.

At the end of the last century neither the imports nor exports exceeded in importance 300 contos of reis<sup>1</sup>; only after the government of Conde dos Arcos did they double in value.

From 1806 to 1819 there passed over the commercial exchange of Belem a great crisis, which admitted of no further improvement. In 1820, seven ships and fifty-three vessels of different tonnage brought to Pará French, English, Portuguese, and African goods, initiating a more prosperous era, if, unfortunately, the internal commotions and political agitations had not almost extinguished the relations of commercial movement.

Only from the year 1836 forward did it commence to revive and develop, as the following tables will show:

<sup>1</sup> About \$150,000 at par rate.



MUNICIPAL BUILDING AND PALACE OF THE GOVERNOR.



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## NAVIGATION STATISTICS.

1836—1837

From foreign ports	66	ships with	9,309 tons.
“ national “	34	“ “	4,534 “
	<u>100</u>		<u>13,843</u>

1837—1838

From foreign ports	54	ships with	9,269 tons.
“ national “	24	“ “	4,912 “
	<u>78</u>		<u>14,181</u>

1838—1839

From foreign ports	61	ships with	9,336 tons.
“ national “	22	“ “	2,679 “
	<u>83</u>		<u>12,015</u>

1839—1840

From foreign ports	65	ships with	9,639 tons.
“ national “	16	“ “	1,613 “
	<u>81</u>		<u>11,252</u>

1840—1841

From foreign ports	74	ships with	12,040 tons.
“ national “	14	“ “	1,543 “
	<u>88</u>		<u>13,583</u>

1850—1851

From foreign ports	84	ships with	14,701 tons. ———
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1861

From foreign ports and national	116	ships with	72,406 tons.
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1871

From foreign ports and national	260	ships with	140,472 tons.
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1881

idem idem	311	ships with	225,484 tons.
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1891

idem idem	410	ships with	472,357 tons.
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## IMPORTATION.

1836—1837

Foreign, in the value of . . . .	689:497\$400
National " " " " . . . .	1,130:605\$333
	<hr/> 1,820:102\$733

1837—1838

Foreign, in the value of . . . .	578:584\$440
National " " " " . . . .	709:006\$590
	<hr/> 1,287:591\$030

1838—1839

Foreign, in the value of . . . .	852:657\$625
National " " " " . . . .	485:587\$044
	<hr/> 1,338:244\$669

1839—1840

Foreign, in the value of . . . .	899:577\$223
National " " " " . . . .	659:761\$488
	<hr/> 1,559:338\$711

1850—1851

Total value of importation	.	.	.	2,291:953	\$995
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1861

idem idem idem	.	.	.	5,660:147	\$471
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1871

idem idem idem	.	.	.	11,796:407	\$431
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1881

idem idem idem	.	.	.	16,907:911	\$406
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1891

idem idem idem	.	.	.	21,235:737	\$696
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Proceeding from the bordering republics we received :

1890

From Peru	1,163,909 kilos of rubber in				
	the value of	.	2,131:981	\$546	
From Bolivia	432,548 kilos of rubber in				
	the value of	.	1,119:666	\$000	
From Venezuela	7,976 kilos of rubber in				
	the value of	.	19:461	\$150	
			<u>1,604,433</u>	<u>3,271:108</u>	<u>\$696</u>

1891

From Peru	701,585 kilos of rubber in				
	the value of	.	2,185:735	\$690	
From Bolivia	502,481 kilos of rubber in				
	the value of	.	1,564:725	\$834	
From Venezuela	3,775 kilos of rubber in				
	the value of	.	11:755	\$350	
			<u>3,762:216</u>	<u>\$874</u>	

## EXPORTATION.

1837—1838			
Total value of exportation	.	.	821:622\$941
1838—1839			
idem idem idem	.	.	848:377\$869
1839—1840			
idem idem idem	.	.	1,236:857\$039
1850—1851			
idem idem idem	.	.	1,986:542\$173
1860—1861			
idem idem idem	.	.	3,567:058\$775
1871			
idem idem idem	.	.	9,348:295\$890
1881			
idem idem idem	.	.	15,701:072\$700
1891			
idem idem idem	.	.	27,755:667\$004

In comparison with these figures it is evident that the foreign commerce increased in these last twenty years at the rate of 296 per cent, or the mean annual progress of 14.8 per cent.; and this is surprising considering that only the United States of America has presented such notable progress; in France it does not reach 10.2 per cent.

Also to be noted is the constant excess in the value of exportation over importation, presenting in the last year a balance of 6,519:929\$308.

According to information given the government, the total value of the state production last year reached much over 45,000 contos; representing a poll-tax of 90\$000, estimating the population of Pará at 600,000 inhabitants.

As principal products figure:

## RUBBER.

This product alone represents nearly two thirds of the total value of production, contributing to the state and municipal incomes nearly 25 per cent. of their value, with neither loss nor impoverishment to the producer.

Exported until 1840 almost exclusively in the form of shoes, the best quality obtained then, the average price of 539 reis a kilogramme.

In 1850 there were exported only 138,873 pairs, but the quantity of smoked rubber augmented, raising the exportation to 1,351,678 kilogrammes.

From 1854 to 1855 exportation of rubber in shoes was entirely discontinued, and the preparation of smoked rubber continued to increase, raising its production in 1861 to 1,872,235 kilogrammes, at the value of 2,369:159\$791.

In conformity to the qualities which to-day are quoted in the market, its exportation in 1871 was of :

Fine rubber,	2,439,620 kls.	in the value of	4,912:811\$614
Middle fine "	258,391 "	" "	473:528\$375
Sernamby "	1,153,011 "	" "	1,494:963\$688

and in the last decade :

*Fine Rubber.*

1881	3,184,811	2\$423	to	3\$183	8,262:686\$000
1882	3,202,734½	3\$050	"	4\$456	11,604:188\$399
1883	3,343,905½	3\$275	"	4\$033	12,218:085\$160
1884	3,065,842½	1\$750	"	3\$400	6,755:918\$260
1885	3,793,023	2\$335	"	2\$775	9,272:694\$920
1886	3,844,983	2\$425	"	3\$100	10,313:136\$840
1887	3,935,558	2\$375	"	2\$996	10,043:982\$060
1888	4,065,862	1\$945	"	2\$625	8,660:942\$040
1889	4,136,562	1\$700	"	2\$025	7,997:317\$931
1890	3,802,558	2\$084	"	3\$425	10,423:234\$459
1891	3,948,146	2\$685	"	4\$660	13,987:049\$634

*Middle Fine Rubber.*

1881	393,743	2\$223	to	2\$975	967:377\$660
1882	436,191½	2\$850	"	4\$256	1,474:521\$583
1883	467,324	3\$075	"	3\$833	1,639:701\$540
1884	486,544	1\$550	"	3\$200	1,064:171\$320
1885	684,188½	2\$175	"	2\$575	1,546:133\$980
1886	662,635	2\$225	"	2\$900	1,639:962\$780
1887	684,573½	2\$175	"	2\$796	1,623:847\$100
1888	1,023,314	1\$745	"	2\$425	2,033:728\$320
1889	1,118,777	1\$500	"	1\$825	1,927:149\$545
1890	985,619	1\$884	"	3\$225	2,492:345\$017
1891	966,929	2\$485	"	4\$460	3,287:718\$025

*Sernamby Rubber.*

1881	1,852,959	1\$175	to	2\$500	2,709:839\$040
1882	2,140,576½	1\$750	"	2\$650	4,722:993\$736
1883	1,903,185½	1\$675	"	2\$518	4,060:574\$200
1884	1,809,734	850	"	1\$833	2,397:212\$260
1885	2,330,442	1\$225	"	1\$900	3,718:718\$100
1886	2,479,048½	1\$525	"	2\$200	4,499:471\$020
1887	2,346,642½	1\$475	"	2\$096	4,034:762\$240
1888	2,357,840	1\$000	"	1\$725	3,076:704\$380
1889	2,864,445	900	"	1\$150	3,014:645\$174
1890	2,767,654	1\$242	"	2\$483	4,990:193\$517
1891	2,714,676	1\$600	"	3\$591	6,198:871\$613

## CACAO.

Well informed persons write that the cacao crops on the banks of the Amazon had formerly become so abundant that they could not be totally transported in the sailing vessels which descended the river; with great loss they remained on shore and were left to be exported in the following year. There were places so rich in this product that the government reserved the value of the crops for defraying the expenses of military uniforms.

If, to-day, this prodigious number of cacao-trees does not

exist, it is certain the use of cacao has been greatly developed, and prices have increased so greatly as to compensate largely for the work and expenses of its crops.

It can be cultivated throughout the State, and on the margins of the rivers Amazon and Tocantins, where the cacao-trees are most abundant. Its planting is easy; the cacao-tree bears its first fruit three years after, and it produces fruit during more than fifty or sixty years, it being sufficient to clean the trees, in which case they give two regular crops; the larger crop being between the months of May and July.

The exportation of cacao in the course of 1780 to 1789, was 9,102,813 kilos, and in 1790 to 1800, 11,911,960 kilos. —

In 1851, 2,963,152 kilos were exported at the value of 243,471\$212; in 1861 the exportation rose to 3,480,401 kilos at the value of 1,475,799\$029; in 1871, 4,191,222 kilos at the value of 1,523,208\$700.

In the last ten years from 1881 to 1891 it was the following:

*Cacao.*

1881	5,104,902	525	to	590	2,740:459\$140
1882	5,900,727	510	"	580	3,315:780\$920
1883	4,962,850	510	"	700	3,255:231\$570
1884	4,857,119	515	"	600	2,776:985\$980
1885	3,414,336	570	"	880	2,491:600\$880
1886	1,812,054½	600	"	840	1,324:729\$480
1887	3,840,048	555	"	600	2,250:927\$300
1888	6,906,730	365	"	550	2,623:418\$480
1889	3,741,937	340	"	390	1,406:463\$340
1890	2,733,186	351	"	485	1,216:863\$020
1891	4,991,620	445	"	850	2,919:467\$630 —

In detail can be better appreciated the importance of the commerce of cacao by the following table, which presents, in tons of 1,000 kilogrammes, all the exportations made by the Exchange of Belém in the last five years:



	1887		1888		1889		1890		1891	
	Entr.	Export	Entr.	Export	Entr.	Export	Entr.	Export	Entr.	Export
January. ....	205	329	257	8	15	4	8	12	150	21
February. ....	407	209	427	404	30	11	24	—	340	308
March. ....	382	317	428	276	47	32	39	49	470	388
April. ....	516	545	410	221	87	64	147	25	450	315
May. ....	885	625	880	851	103	21	370	60	957	247
June. ....	908	854	2,000	1,190	280	40	1,150	817	1,050	1,264
July. ....	662	427	1,750	1,881	1,075	755	1,010	424	1,800	1,258
August. ....	181	451	963	1,752	1,405	1,244	447	926	750	1,068
September. ...	81	661	273	520	825	785	144	390	400	508
October. ....	17	31	77	72	454	945	27	645	35	401
November. ...	15	9	10	290	131	521	25	19	10	626
December ...	36	17	19	9	29	46	40	6	11	44

## BRAZIL NUTS.

A product formerly known in the consuming markets under the name of Maranhão nuts is produced in this state and along the Amazon, where its crop is within the reach of all who wish to procure them. In our forests are numberless Brazil-nut trees; the crop is almost wholly gathered in the proximity of the margins of the rivers; and its exportation which, principally in the years 1857 to 1862, was made in the husk and by the *alqueires*,<sup>1</sup> is made to-day exclusively without the husks and by weight.

Its price has constantly varied; from 1836 to 1851 it always maintained the price of 2\$000 to 6\$000 per 50 kilogrammes; it has, however, augmented, and this year (1892) it rose to the advanced price of 27\$950 per hectolitre, or 559 per kilo.

According to official documents, the average annual exportation of nut in the period of 1836 to 1850 was 1,550,100 kilos, at the value of 34:269\$760; in 1851, 3,337,320 kilos were exported, at the value of 87:874\$100; in 1861, the year in which the exportation in husks advanced the most 2,301,320 kilos and 35,183 husks, at the value of 238:728-

<sup>1</sup> A Portuguese dry measure.

\$720; it rose in 1871 to 2,694,924 kilos at the value of 296:861\$300, and the exportation during the last ten years was the following :

*Nuts.*

1881	71,114	4\$295	to	8\$600	392:023\$040
1882	51,290½	5\$150	"	9\$000	391:824\$740
1883	29,715½	8\$500	"	15\$000	301:855\$440
1884	99,520	4\$350	"	15\$000	653:310\$900
1885	40,503	7\$000	"	12\$800	385:513\$720
1886	17,119	7\$000	"	14\$650	172:910\$360
1887	63,243	5\$804	"	15\$150	601:188\$800
1888	93,194	4\$350	"	9\$600	630:817\$180
1889	30,794½	3\$950	"	7\$400	174:568\$380
1890	4,221	8\$000	"	13\$000	46:031\$258
1891	109,700	5\$000	"	15\$766	868:279\$935

## TOBACCO.

Cultivated more or less throughout the state, but principally in the district of S. Miguel do Guamá, Ourem, Irituia, Acará, and Bragança, its production scarcely suffices for the consumption of the interior of the state and Amazon; its exportation is very small.

Its production is difficult to be valued, because statistics are given only concerning that which comes to the market of the capital, where entered :

In 1871	116,908 kilos at the value of	228:453\$350
" 1881	257,479 " " "	527:831\$950
" 1891	404,687 " " "	870:077\$050

## MANDIOCA FLOUR (FARINHA).

Constituting the principal food of all the population, the culture of mandioca is most developed, the annual production of *farinha* being raised to 20 millions of kilogrammes; constituting an important article of exportation for the

Amazon, which is entirely supplied with this article by Pará.

Its price, according to its quality, varies from 3 to 8\$000; it having this year been sold at the fabulous price of 18\$000 per *alqueire* or 28 litres.

To the port of the capital came :

In 1881	.	.	.	5,091,348	<i>alqueires</i>
" 1890	.	.	.	11,051,748	"
" 1891	.	.	.	7,385,768	"

#### NATIVE RUM.

The production of native rum in Pará, notwithstanding the advantage offered by nature, and the fertility of lands for the cultivation of sugar-cane, is not sufficient for home consumption, and from Pernambuco, in 1891, 1,466,856 litres were imported.

To the port of the capital came :

In 1861	.	.	.	.	701,484	litres
" 1871	.	.	.	.	436,445	"
" 1881	.	.	.	.	1,751,296	"

and in the last five years :

1887	.	.	.	.	1,006,160	litres
1888	.	.	.	.	1,974,375	"
1889	.	.	.	.	4,205,380	"
1890	.	.	.	.	2,071,964	"
1891	.	.	.	.	1,904,778	"

#### BANKING INSTITUTIONS.

##### *Established in the State.*

*The Commercial Bank of Pará.*—This is the oldest establishment of credit founded in the state.

By act of November 11, 1846, the general government authorized the President of the province to inform him if the establishment of a bank was possible, and useful.

In 1852 Counsellor Fausto Augusto de Aguiar confided in the diligence and activity of Messrs. Francisco Gaudencio

da Costa, Henrique de LaRocque and Vicente Ruiz to obtain the subscription of the capital necessary and the making of the laws ; only, however, on the 1st of July, 1869, was the bank authorized, by Decree No. 434 of the 10th of March of this year to commence its operations, its capital being raised to the amount of 1,000 contos of reis.<sup>1</sup>

Its operations, according to its statutes, are circumscribed to discounts, advances, exchange, and commissions on buying and selling bonds and stocks.

In 1883 its capital was increased to 1,000:000\$000, divided into 20,000 shares, belonging to 534 shareholders.

The bank operates in its own edifice, and enjoys no favor whatever from the government. It has passed through several fluctuations or crises of the market without having experienced any notable shock.

Its reserve fund has enlarged each six months, with which the bank meets its losses ; dividends have always been paid to its shareholders, those of the last five years being :

In 1887, 1st half year	6 %	2d half year	7 %
" 1888, " " "	6 %	" " "	8 %
" 1889, " " "	5 %	" " "	4 %
" 1890, " " "	4 %	" " "	4 %
" 1891, " " "	4 %	" " "	5 %

*The Pard Bank.*—This was organized the 9th of April, 1883, and commenced its operations the 5th of July of the same year, with capital of 1,000:000\$000 (one thousand contos of reis), which in 1886 was increased to 2,000:000\$000, and lately to 3,000:000\$000, all realized in shares of 100\$000, belonging to 506 shareholders.

This bank operates in its own edifice, for which it was expressly constructed in 1888. This building figures in the active balance-sheet at 240 contos of reis, a less sum than it cost, and to-day much less than it would cost ; the ground floor is occupied by two commercial establishments, which bring in annually 7:200\$000.

The bank operates in discount of notes, opening of credit

<sup>1</sup> About \$500,000, at par rate.

in accounts current on guaranties of commercial and government securities, loans on mortgages of city landed estate, buying and selling of companies' shares, of miscellaneous societies, commissions, buying and selling of exchange, collection of drafts and bills of exchange for the account of third parties, opening letters of credit at home and abroad.

During the last five years the bank distributed 35 % of dividends, or 7 %, each year ; and its reserve fund, consisting of 5 % of net profits, is 97:796\$440.

The bank owes no favor to the government.

It never had *deficits*.

Its correspondents, against whom it draws, are :

*Parr's Banking Company* and *The Alliance Bank, Limited*, in London.

*Crédit Lyonnais*, in Paris, and its branches and agencies in all the cities of France, Germany, Austria, Belgium, Bulgaria, Denmark, Egypt, Spain, Greece, Holland, Italy, Norway, Roumania, Russia, Servia, Switzerland, Sweden, Turkey, and Tunis.

*The Lisbon and Azores Bank*, in Lisbon.

*Minho Bank*, its branches and agencies, in Oporto, in Braga, and the principal cities and towns of Portugal.

*G. Amsinck & Co.*, New York.

*Commercial Bank of Rio de Janeiro*.

*South American Bank*, in Rio de Janeiro.

*Santos & Brothers*, and *Maia Sobrinho & Co.*, in Maranhão.

*S. R. Cunha & Co.*, in Ceará.

*Araújo Rosas & Co.*, in Manáos.

*Belém of Pará Bank*.—Urged by the necessities of the market, Messrs. Joaquim Rodrigues Roxo, José Marques Braga, Paul Mouraille, Manoel Joaquim Machado de Freitas, and the Baron of Gondoriz organized this bank, observing the regulations of the law No. 3150 of November 4, 1882, and organizing the same, June 8, 1886, beginning its operations September 9th of the same year.

The capital of the bank is 1,000:000\$000, divided into 10,000 shares payable to the bearer.

Organized exclusively for the discounts of bills and other

operations in this market, it was not long before they saw the convenience of extending the sphere of its transactions, commencing exchange operations.

Its shares being issued to the bearer, it is necessary to deposit them in the bank three days before the meeting of the general assembly of the shareholders; to have a quorum, it is sufficient that one fourth of its capital be represented.

Its average dividends since the incorporation have been  $7\frac{1}{2}\%$  yearly, or  $3.75\%$  each half year.

Its reserve fund is 20:387\$198, and the bank has made worthy progress.

To this bank the government concedes no favor.

*Bank of Issue of the North.*—This bank was installed on the 9th of August, 1890, with the capital of 20,000:000\$000, of which 10,000:000\$000 is subscribed and 3,000:000\$000 realized. Besides the power that it has of issuing notes to the bearer and at sight, it attends to all banking and exchange operations and makes issue of bonds secured by mortgage.

Its reconstituting fund is	23:966\$720
“ reserve “ “	20:661\$480
“ integralizing “ “	221:007\$880
“ guaranty “ “	48:708\$180

Its circulating issue is 1,000:000\$000; but it is guaranteed by an equal amount of government bonds deposited in the National Treasury.

*The Popular Credit Bank.*—Established to operate in money loans on deposits, mortgages, and guaranty of private and public securities, it has lately resolved to widen the circle of its operations, and to-day it equals other similar establishments.

*London Brazilian Bank Limited.*—Authorized by decree of general government to establish in the capital a branch bank, it began operations.

The capital of the head bank is:

Subscribed	£1,550,000
Paid	750,000
Fund	500,000

The capital of its branch at Pará, according to the official declaration of its agent to the Fiscal Department of the state, scarcely reaches 300 contos of reis.

It operates in discounts, loans, exchange, etc.

#### MISCELLANEOUS COMPANIES.

##### *Established in the State.*

*The Gram-Pará Water Company.*—Incorporated in May, 1881, it commenced to furnish water to the public October, 1883, having laid 139 service-pipes, that produced the first month a receipt of 1:700\$000.

Its original capital was 800 contos of reis, raised later on to 1,000, and afterwards to 2,000:000\$000.

The government of the state exempts this company from all taxes; gave lands and water sources to amount of over 100 contos of reis, and indemnifies it for all custom-house duties in the importation of necessary materials for its work, etc.

Its shares are sold in the market at a premium of 95 %, its dividends having been as follows :

1st, December, 1884 on	625:400\$000	4 %	25:016\$000
2d, June, 1885 "	800:000\$000	4 %	32:000\$000
3d, December, 1885 "	"	5 %	40:000\$000
4th, June, 1886 "	"	6 %	48:000\$000
5th, December, 1886 "	1,000:000\$000	6 %	60:000\$000
6th, June, 1887 "	"	7 %	70:000\$000
7th, December, 1887 "	"	8 %	80:000\$000
8th, June, 1888 "	"	6 %	60:000\$000
9th, December, 1888 "	"	7 %	70:000\$000
10th, June, 1889 "	"	7 %	70:000\$000
11th, December, 1889 "	"	7 %	70:000\$000
12th, June, 1890 "	1,103:260\$000	7 %	77:228\$000
13th, December, 1890 "	1,223:500\$000	6 %	73:410\$000
			<hr/>
			775:654\$000

The company has already laid 61,631 metres of water-pipes, and the daily consumption of water is over 1,000,000 of litres,

The value of the properties and completed works reaches the sum of 1,274,922\$870.

*Insurance Company of Gram-Pard.*—Authorized by Decree No. 8,400, of February 4, 1882, and organized March 25th of the same year.

Its capital is :

Realized . . .	100:000\$000	
Not realized . . .	900:000\$000	1,000:000\$000
Reserve fund . . .		65:882\$508

Its shareholders number 98, and the transfer of shares was realized in 1891 at the prices of 100\$000 and 110\$500.

ACCIDENTS PAID SINCE ITS FOUNDATION.

Year.	Maritime.	Terrestrial.	Total.
1882 . .	50\$721	1:754\$793	1:805\$514
1883 . .	7:421\$747	414\$497	7:836\$244
1884 . .	58:818\$580	—	58:818\$580
1885 . .	570\$280	—	570\$280
1886 . .	9:927\$494	75\$000	10:002\$494
1887 . .	6:339\$113	32:650\$000	38:989\$113
1888 . .	2:722\$273	62:241\$552	64:963\$825
1889 . .	10:156\$433	—	10:156\$433
1890 . .	22:018\$572	—	22:018\$572
1891 . .	49:405\$092	280\$100	49:685\$196
	167:430\$305	97:415\$942	264:846\$251



## DIVIDENDS DISTRIBUTED SINCE ITS FOUNDATION.

2d half-year of 1883	12½ %	12:500\$000
2d " " 1884	6 %	6:000\$000
1st " " 1885	12½ %	12:500\$000
2d " " 1885	12½ %	12:500\$000
1st " " 1886	12½ %	12:500\$000
2d " " 1886	12½ %	12:500\$000
2d " " 1887	15 %	15:000\$000
1st " " 1888	12½ %	12:500\$000
1st " " 1889	7 %	7:000\$000
2d " " 1889	7½ %	7:500\$000
1st " " 1890	5 %	5:000\$000
2d " " 1890	7 %	7:000\$000
2d " " 1891	22 %	22:000\$000
		<hr/>
		144:500\$000

*Commercial Insurance Company.*—The capital of the company, according to the balance of June 30, 1892, is the following :

Realized . . .	150:000\$000	
Not realized . .	1,350:000\$000	1,500:000\$000
Reserve fund . .		168:577\$491
Especial reserve fund		60,593\$735

The especial reserve fund is destined to guarantee dividends, and is formed from the balance of profits, after expenses have been deducted.

Since its installation the company has paid 459:537\$435 of dividends; the last having been at 25 % or the maximum permitted by the statutes.

— *The Pará and Amazon Company* was organized in 1883 with the capital of 1,500 contos of reis, in 3,000 shares of 500\$000 each, and commenced to work in 1884 with eight paddle-wheel steamers. In 1889 this capital was reduced to 2,933 shares of 250\$000. The company receives a subsidy of 48:000\$000 yearly, in order to make a voyage to Santa Julia.

Its fleet is composed of seven steamers, three being constructed in America and four in England.

The company has always struggled against great difficulties, and so far has never distributed dividends. It owns the Central Wharf of Belém.

The lines which the company runs are :

Santa Julia once monthly, subsidized by the state.

The islands, twice monthly

The Purús River, once monthly

The Madeira River, six times yearly

} not subsidized.

#### *Established Abroad.*

##### *The Amazon Steam Navigation Company, Limited.—*

Founded in London with a nominal capital of £625,000, divided in 50,000 shares of £12 10s each, of which 40,419 only have been issued, amounting to £505,237. To this was transferred, in July, 1872, the Navigation and Commercial Amazon Co., organized in Rio de Janeiro in 1852, with the capital of 4,000:000\$000, divided in 20,000 shares.

In 1874 occurred the fusion of the Pará Fluvial Co., in January, and in July the Fluvial Co. of the Upper Amazon, both subsidized by the government.

The fleet of the Amazon Steam Navigation Co. consists now of twenty-nine steamers of 9,184 tons.

It possesses also an important machine-shop, with foundry, docks for repairs, etc. ; valuable buildings and lands, deposits for coal, and a vast metallic wharf, where steamers touch for loading and unloading, and for the embarking and disembarking of passengers.

The company steamers made, during the last year, in the different lines over 500,000 miles ; one of these lines communicating directly with the republic of Perú, and others indirectly with Bolivia and Venezuela.

In 1853, the first establishment of the company, its income was 34:205\$821, coming from :

Freight . . . . .	12:855\$182
Passages . . . . .	21:350\$639

During the last five years it rose :

In 1887 . . . . .	2,578:673\$190
" 1888 . . . . .	2,918:926\$040
" 1889 . . . . .	2,839:341\$970
" 1890 . . . . .	3,009:510\$430
" 1891 . . . . .	4,070:948\$640

The dividends distributed have been at 7 %, with the single exception of 1887, in which they were at 6 %.

#### BOOTH'S LINE OF STEAMERS.

The steamers of Booth's line initiated twenty-five years ago the regular navigation between Europe and the ports of Northern Brazil.

At this time began the monthly voyages between Liverpool and Pará, Maranham, and Ceará, stopping at Lisbon. Later on, Pará was granted another monthly line, but direct and exclusive, with steamers especially adapted to the service between this port and Lisbon, Havre, and Liverpool, enlarging the original line so as to include Hamburg, Antwerp, Havre, and Oporto.

The steamers maintain two monthly lines between New York and North Brazil, being: one between that port and Pará, Maranham, and Ceará, and the other between New York and Manáos, stopping at Pará.

Its steamers enjoy privileges of packets, but receive no favor whatever from the central government nor from the States of Pará, Maranham, and Ceará; the Amazon, however, gives a subsidy of 48:000\$000 yearly to the monthly line between New York and Manáos.

In the four monthly lines ten steamers of 13,949 tons are employed, capable of taking 522 passengers; two steamers being appropriated entirely to the service of passengers, and two are being substituted by new ones of a better class.

The following tables demonstrate clearly the real services which this line of steamers lends to the important commerce of this state.



INTERIOR OF THEATRE OF PAZ.



*List of the Steamers of Booth's Line.*

NAMES	Tonage of Register	Capacity for Passengers	
		1st Class	2d Class
Lanfranc . . . . .	1,657	71	70
Anselm . . . . .	1,562	68	70
Augustine . . . . .	1,105	12	20
Ambrose . . . . .	1,168	15	20
Basil . . . . .	1,184	12	20
Clement . . . . .	1,227	10	12
Cyril . . . . .	1,190	10	15
Gregory . . . . .	1,571	15	20
Justin . . . . .	1,744	15	20
Origen . . . . .	1,541	12	15
	13,949	240	282

*Passage Rates.*

Destination	Going						Round Voyage	Leave Pará		
	1st Class			3d Class			1st Class			
	£	S	D	£	S	D	£		S	D
Liverpool . . .	25	0	0	12	10	0	40	0	0	17th
Havre . . . . .	25	0	0	12	10	0	40	—	—	17th
Lisbôa . . . . .	20	0	0	10	0	0	35	0	0	17th
Madeira . . . .	20	0	0	10	0	0	—	—	—	17th
New York . . .	\$90			\$45			—	—	—	
Manáos . . . . .	R\$	60,000		17,000			105,000			23d
Maranhão . . .	R\$	35,000		12,000						20th
Ceará . . . . .	R\$	70,000		20,000						20th
Barbados . . .	R\$	200,000		100,000						30th

Freight varies according to cargo and time.

This is the same table used for the steamers of *Red Cross Line*.

*Chart of the Cargo Transported from Pará by the Steamers of Booth's Line, from 1882 to 1891, Inclusive.*

YEARS	QUANTITIES IN TONS OF 1000 KILOGRAMMES										TOTAL				
	FOR EUROPE					FOR NEW-YORK									
	Rubber	Nuts	Cacáo	Various	Total for Europe	Rubber	Nuts	Cacáo	Various	Total for New-York					
	Rubber	Nuts	Cacáo	Various	Total for Europe	Rubber	Nuts	Cacáo	Various	Total for New-York	Rubber	Nuts	Cacáo	Various	TOTAL
1882	1810	690	648	96	3244	605	110	—	94	809	2415	800	648	190	4053
1883	1692	615	618	140	3065	901	150	—	75	1126	2593	765	618	215	4191
1884	1885	1105	350	51	3391	1406	1180	—	54	2640	3291	2285	350	105	6031
1885	2202	710	100	375	3387	2166	600	—	55	2821	4368	1310	100	430	6208
1886	2289	391	16	150	2846	2863	720	—	134	3717	5152	1111	16	284	6563
1887	2051	919	1341	143	4454	3019	1310	—	56	4385	5070	2229	1341	199	8839
1888	2599	1200	1400	312	5502	3866	1860	—	75	5801	6456	3060	1400	387	11303
1889	2680	840	525	250	4295	3747	1015	8	95	4865	6427	1855	533	345	9160
1890	2056	100	429	158	2743	3937	400	42	81	4460	5993	500	471	239	7203
1891	3078	3090	1505	137	7810	4095	3310	47	56	7508	7173	6400	1552	193	15318
Total	22342	9660	6932	1812	40737	26605	10655	97	775	38132	48938	20315	7029	2587	78869

Besides these lines of navigation, Belém of Pará communicates with Europe and the United States of America by means of the *Red Cross Line* and the *U. S. and Brazil Mail Steamship Co.*, which have regular lines, some of which are directed exclusively to this place. The *Red Cross Line* employs nine steamers of 9,467 tons, and the *U. S. and Brazil Mail Steamship Co.* five steamers of 11,356 tons.

Besides the enterprises and companies quoted are many others in Pará, about which sufficient information has not been obtained for this work.

*The Navigation Enterprise of the Guamá and Tocantins rivers.*

*The Perfected Ceramic.*

*The Pará Paper Factory* which is now starting an important steam factory.

*The Maranhão Coast Co.*, subsidized by the state of Pará for coast navigation between the two capitals, and in which are employed five steamers of 2,278 tons.

*The Lloyd Brasileira*, which employs twelve steamers of 1,355 tons, in the service of interior navigation, receiving for several lines subsidies paid by the state, and for the exterior navigation seven steamers of 13,993 tons.

*The Gram-Pard Industrial Enterprise*, which maintains a complete telephonic service in an extensive area of more than five kilometres.

*The Auxiliary Commercial Co.*, holding large warehouses and wharves along the shore of the capital.

*The Oporto Guarantee Insurance Co.*, with an important agency in land and maritime insurance.

*The Pard Building Co.*, with nearly fifty edifices, and others in construction; enjoying benefits and privileges conceded by the government.

*The Pard Tramway Co.* exclusively holds all the lines of American street-cars, which intersect the city in all directions.

*The Pard Gas Co.*

*The Protecting Farming Industrial Co.*, destined to protect farming industry, and supply the market with fresh meat.

*The Brazilian Cold Storage Co.*, which proposes to establish in this capital a permanent deposit for preserving meats by the freezing system, for which they have all the necessary materials.

The capital subscribed is sixty thousand contos of reis, and it has already seven appropriate steamers.

*The Railway and Navigation Co. of the Tocantins and Araguaya*, with the capital of twenty thousand contos of reis, for the construction of the Araguaya and Tocantins Railway, in order to avoid the dangerous waterfalls of the river. The steamers will navigate between the terminal points of the railway and the ports of Belém and the Upper Tocantins and Araguaya.

The railway plans are finished, and the river navigation service between Alcobaça and Belém is already initiated.





**PART V.**

**INDUSTRIES.—WAYS OF COMMUNICATION AND  
TRANSPORT.—AGRICULTURE.**



## INDUSTRIES.

PARÁ, sooner or later, will become an industrial country.

When the fabulous riches of its forests of exploration begin to decrease, or no longer exist in direct proportion to the laborers who will one day throng hither, then the speculative spirit of civilization will learn to know and utilize the magnificent materials which strew the Amazonian soil.

The rich forests, from which a small number of specimens will figure in the Columbian Exposition, will furnish woods for the most ingenious constructions, unsurpassed luxury, and art.

The *acrocomia* and the *astrocaria*, to which belong the *january* and the *tucum*, and an infinity of palms which abound on the margins of our rivers, contain in their leaflets delicate fibres, fine as silk, and stronger than linen or tow of Egypt.

From these fibres are woven hammocks, carpets, summer-hats, mats, and fine baskets.

From the *piassaba* and other *mauritis* are made brooms and great ship cables.

From all is extracted a fine white oakum, which industry one day will prefer for calking in great shipyards, and which can be employed in the manufacture of paper.

Some climbing plants give *cipós* of great strength, from which are already manufactured baskets and hats.

An infinity of other vegetables with therapeutical virtues, recognized by scientific authorities, answer for a complete pharmacopic industry.

Many others give from their fruits, or from their proper saps (the *andirobeira*, the *castanheira*, and *cumarúzeiro*, etc.), oils finer than the best reputed in the market.

There are trees whose barks and wood give beautiful dyes, so that five dyeing establishments at Pará are already utilizing, in a great measure, these vegetable products.

In the Amazonian forests are an infinity of resins, which substitute gum-arabic, and others which are among the best reputed in the market.

In the animal kingdom, so diversified and great, there are animals which give machine oil; others strong and delicate skins for shoes and even gloves; among this number are *the alligator, the otter, the deer, and the ariranha*, etc.

Finally, in the mineral kingdom, and constituting the greater part of the subsoil of the Amazon, there are clays of the most beautiful and varied colors, which can be used even in fine crockery.

In the region of Monte-Alegre are layers of gneiss, slates, and marble, of which specimens go to the Exposition.

There, and in the valleys of Tocantins and Tapajós, indications of coal mines have been discovered.

Of all this industry will take account, and Amazonia will export one day for the old world, at the side of its natural products, the manufactures of its riches.

Labor, in Pará, had a rapid evolution from indigenous or African slavery to freedom, and in this *jump* industry and agriculture, that had gone on prosperously in their start, suffered a sort of *drawback*.

Besides this, steam navigation on the Amazon, introduced in 1851, facilitating entrance to the interior, took the small number of working hands, which were employed in native industries, to extract rubber, whose price commenced to augment with its increasing applications.

Thus, in 1862 we had 264 industrial establishments, distributed in the following form: 166 sugar estates, 24 soap factories, 6 oil factories, 18 lime-kilns, 6 crockery manufactories, 6 tanneries, 1 cashew-wine manufactory, 1 chocolate manufactory, 3 rice mills, 1 coffee mill, 25 brick yards, 10 saw-mills. We do not reckon in this estimate 1,565 rough machines for the preparation of mandioca meal, because this rudimental industry constitutes almost a custom of the

rural population of Pará, with scarcely any improvement since the time of the Indians, among whom it was already so common that Pedro Teixeira, in the first Portuguese expedition to the Amazons, bought in one Indian settlement alone 800 *alqueires* of *farinha*.

To-day this industry is neglected for want of hands, and the greater part of *farinha* that serves as food to Amazonia comes from Maranhão.

The factories mentioned in 1862 gave for home consumption as well as to other provinces, thus :

	Kilogrammes.	Official Value.
Soap . . .	16,397	5:101\$280
Sugar . . .	260,991	35:538\$120
Rice . . .	510,192	33:458\$180

The product of other industries was consumed in the province itself, which imported almost nothing for its alimentation.

In proportion, however, in which the extraction of rubber developed, and the price of its products augmented, the sugar mills stopped their traffic, or limited it to the making of rum ; and of the products which we exported, we no longer have cotton, rice, sugar, and coffee ; and of oil we have only exported 6,404 litres.

Pará will, withal, reconquer its place in the industrial movement of the century, and the fall of exchange, with the rising of prices of foreign products, has made us think that we have not been placed in such a rich country merely to explore what Nature affords us in the endless products of its forests.

The government, on its side, has lately comprehended that it is necessary to favor industry, and the legislative power will soon diminish the taxes which weigh over it.

Already a guaranty of 6 per cent. interest on a capital of 600 contos of reis has been conceded for the establishment of a paper factory which will utilize our vegetable fibres.

Also is in treaty the establishment of a rope and carpet factory, whose machinery is already spoken for ; a privilege for a rubber factory has also been conceded.

The extraordinary development which the capital of Pará has created, at the side of building industry, furnishes all improvements necessary to great cities—paving, gas illumination, water supply, telephone, telegraph lines, etc.

Municipal government has paved the streets with parallelo-pipedons of granite and of wood; these last have been prepared in the state, and make both handsome and durable pavements, creating for us a new industry.

The water supply was contracted for with the Engineer Ed. Compton, and by him transferred, in 1881, to an anonymous company, which has already realized a capital of 2,000,000\$000, giving a semi-annual dividend of 8 per cent.

The works commenced in 1882, and were concluded in 1885, water having been furnished to the city since 1883.

The distributing tubes are of cast-iron, two to three inches in diameter.

The two subterraneous reservoirs from the rivulet *Utinga*, which furnish the water supplies, have each a capacity of 2,000 cubic metres. The reservoir of S. Braz has a cylindrical form, and is of forged iron, with the capacity of 1,570 cubic metres, or 1,570,000 litres of water, and is 35 metres above the ground, in order to make the distribution, and is supported by columns of cast-iron, the water being raised by means of forcing and lifting pumps, moved by steam boilers of 30 horse-power.

The canalized waters, according to various analyses, at different times, are abundant and pure.

*Gas illumination* was inaugurated in 1864 and the time of its contract is about to expire, the municipality having made advertisements, in different capitals, calling for proposals to undertake this service by carbonic gas or by electricity.

*The telegraphic service* which connects Pará with other parts of Brazil and foreign countries has three lines: the English, French, and National. The first was inaugurated in 1872, the second in 1885, and the third in 1891.

*The telephonic service* was inaugurated in 1882. It is regularly good, and has lines of considerable length, accom-

panying the Bragança railway, the longest being 74 kilometres, which communicates the capital with the agricultural colonies of Castanhal, Araripe, and others.

The looking for immediate profits has limited our industrial movement to little more than this. We have three small branches, which are still being explored; viz., *sugarcane plantation, brick-yards, and steam saw-mills*, the motive power of which, almost always, is steam; whereas the millionth part of the force of the current of our small rivers would be sufficient to put into movement all the factories in the world.

According to Agassiz, the rivers seem destined to serve primarily as a motive power for saw-mills, which are to be established along their margins, and afterwards as a means of transportation for the material thus prepared.

Once more the government, who has finally comprehended this truth, is constructing in the Castanhal colony a large saw-mill with an engine to grind cane, the transmissory wheel of which will be moved by the current of the rivulet Castanhal, which has a force of 9 horse-power.

Pará has 101 sugar estates, 64 being worked by steam and 37 moved by water and animals. They represent a total capital of 2,000 contos, giving a receipt of 910 contos of reis, which does not compensate for the expense of planting cane and dear hand labor, and, on this account, this industry remains stationary.

The state has 36 steam saw-mills, 6 of which border the Bragança railway, and with the surrounding woods and facility of transport are already giving favorable results.

Pará has 35 brick-yards, of which the Barcarena, moved by steam, was the first of this kind in Brazil, and all represent a capital of 960 contos of reis.

Lately the capital of Pará has developed in such a manner that in the past year alone have been constructed over 700 dwellings; on account of which the materials of construction here used, such as tiles, bricks, boards, and planks, have risen extraordinarily in price, so that saw-mills and brick-yards yield an immense income.



Other industries have developed almost exclusively in the capital, where we have as principal establishments: 4 soap factories, 1 glazed-ware and earthen-tube factory, 1 ice factory, and mineral waters, 2 chocolate factories, 2 of metallic works, 1 powder factory, and several small copper-smiths', blacksmiths', and turners' shop, tanneries, and joiners' shops.

In Cametá there is one ucuúba oil factory.

In Santarem there are, besides saw-mills and brick-yards, lime kilns and cashew-wine-presses, 2 yards for naval constructions.

The industrial movement of this town is due to a small remaining colony of Americans, who established themselves there over twenty years ago.

The capital contains 11 large workshops, of which 8 are larger and 3 smaller.

The larger ones are: of the Marine Arsenal (with saw-mills, carpenter, and cooper shop and foundry), Coelho & Co's and Manoel Pedro & Co's (with saw-mills and carpenter shops), the Amazon Co's (with coppersmith and blacksmith shops and foundry), Bulhosa & Co's and George Sumner & Co's (with cooper and blacksmith shops and foundry), the Arsenal of War (with carpenter, tailor, and shoemaker shops), and the Bragança railway (with carpenter and blacksmith shops and foundry). The smaller are: The Pará tramway with carpenter shop and the *Providencia* (the Catholic Bishop's Institute), with saw-mills, carpenter, joiner and tinsmith shops, and the Boys' Institute with joiner, shoemaker, tailor, and blacksmith shops.

We have not the miserable proletarian class, which with the crisis in labor represents one of the most difficult problems for European governments.

The Pará workman is a citizen in full enjoyment of his civil and political rights; if he does not live luxuriously, he at least lives comfortably.

The working hours number from 8 to 9 daily. The salary in the shops is from 3 to 8 mil reis per day, and one never hears of *strikes*, as it is easy for a discontented workman

always to find even more advantageous employment, because of the extraordinary need of workmen in Amazonia.

The number of workmen belonging to different liberal professions can be calculated in thousands.

The workshops which, through their standing, pay duties are: 29 tailor shops, 1 tannery, 7 fire-work factories, 1 shirt-making establishment, 3 umbrella factories, 1 engraver's shop, and 2 mineral-water establishments, 1 lime kiln, 2 marble-cutters, 4 liqueurs establishments, 1 box factory, 1 perfumery establishment, 12 tinsmith shops, 3 farrier-shops, 1 harness-maker shop, 12 goldsmith shops, 60 bakeries, 3 photographic establishments, 5 watchmakers, 10 shoemaker shops, 5 dyeing establishments, 44 tobacconists, 23 barber shops, 6 joiner shops, and many other establishments, forming in the capital a total of 2,161.

In the state there are altogether 41 typographical and 2 lithographical establishments, which publish 32 papers: *The Official Diary*, *The Province of Pard*, *The Pard Post*, *The Democrat*, *The Republic*, *The Workmen's Tribune*, *The Christian Apologist*, *The Musical Gazette*, *The Musical Saloon*, *The School*, *The Brazil*, and *The Clerk's Voice*, in the capital; *The Abaetéense*, *The Equator*, *The Alemquer Gazette*, *The Local Intrigue*, *The Tocantins*, *The Bragantino*, *The Republican*, *The Citizen*, *The Caetéense*, *The Commercial*, *The Reaction*, *The MonteTribune*, *The Monte-Alegrense*, *The Baixo Amazonas*, *The Municipio*, *The Marapaniense*, *The Gurupdense*, *The Curuçdense*, and *The Light*, in the interior of the state.

Among the companies which are opening up industries we have, besides those quoted: one *Constructing Company*, with municipal privilege for building workmen's houses, of which it has already given an example in the *Villa McDowell*; one *Protecting Industrial Co.*, with the aim of treating the interests of the stock-raisers. This company has already realized the capital of 250:000\$000, and distributes satisfactory dividends to its shareholders.

We have four insurance companies: the *Gram-Pard* with the capital of 100 contos, taking maritime risks against goods and money, and land against fire and lightning; the

*Pará Commercial Co.*, with 1,500 contos, taking maritime and land insurance; the *Garantia do Porto*; the *Paraense*, this last with the capital of 500 contos, taking land and maritime insurance.

Pará has had at times different associations for the ostensible purpose of protecting industrial arts; not any of them, however, have succeeded in raising the necessary large capital for an industrial speculation, capable of breaking the old routine of commerce.

We must do all in our power to attract here an intelligent colony who will utilize our raw material, and this we will realize when it is known that our climate is in reality what Agassiz declares it to be—"the best moderated in the world, having scarcely 31° Centigrade for the mean of its maximum, and the Amazonian death-rate is  $\frac{1}{20,000}$  daily."

We are certain the Exposition at Chicago, making us known to European civilization, will place South America at the head of the world and develop from the Amazon the strength for the most powerful conceptions of the coming century.

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## WAYS OF COMMUNICATION AND TRANSPORT.

THE great economic transformations, which day by day operate in the largest and most fertile valley of the world, are fulfilling Humboldt's prophecy, the "legend of gold" of Amazonia.

"It is there," says the scientist, "that one day, sooner or later, will concentrate the civilization of the globe." The prediction of science is no more, as of old, an unfounded hope; the Amazon, following the Ganges, the Euphrates and the Nile, has already visibly engraved the first dates of its future greatness: the application of steam in the transportation of its varied products; the free navigation of the great river to the flags of all nations; the emancipation of slavery



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in the production of its inexhaustible riches, the order and progress proclaimed in our political constitution, accent, like glowing pages of history, the initiation of the grand Amazonian civilization.

What more beautiful, in its majestic simplicity, than the Amazon valley, whose immense circuit, starting from the golden plateaux of the Guianas, terminates in the eastern declivities of the Andes, where earth and sky meet and caress in the aqueous bosom of the giant of rivers! In this labyrinth of islands and waters, where creation unrolls itself so sublime and fertile; where its mountains rise sky-high, and their counterforts follow in hilly chains or ranges; where ice melts and the clear fountains precipitate themselves in dizzy rapids; in these regions of colossal forests, of smiling plains where vegetation precedes life and life art, the work of man must one day show itself powerful.

The river-sea and its tributaries have traced the trajectory of Amazonian commerce over a surface almost equal to that of Europe, viz., seven millions of square kilometres. From Lake Lauricocha, in the *cordilheiras* of the Andes, 212 kilometres from the city of Lima, the Amazon, in the beginning a delicate streamlet of water, fertilizer of the valley of Huantar, descends in the gigantic hydrographical scale of 5,500 metres; and, by a canal of 13,000 metres, opened between scraggy rocks, noisy as a cry of triumph, precipitates itself from the enormous Andean bar in the Mediterranean of fresh water, which gives its name, announcing, like another Columbus, the natural road for the circulation of the incommensurable riches of Amazonia by the Atlantic and Pacific. Venezuela through the river *Negro*, Bolivia through the *Madeira*, Perú through the *Jurud*, *Purús*, and *Javary*, New Granada through the *Içá* and *Japurá*, Ecuador through the *Napo*, Goyaz through the *Tocantins*, Matto-Grosso through the *Tapajós*, all powerfully contribute to make of this mysterious El-Dorado, richer than Asia, placed between two oceans, at equal distance from Canada and the Plate, Central Europe and Southern Africa, the great emporium, the commercial centre of the world.

On the other hand, observation and intimate examination of phenomena, and the abstract relations under which they present themselves, gave to scientific theories the exactness necessary for their application in practice.

The care with which actually established results are scrupulously separated from those which are merely founded in doubtful analogy; the severe and uniform criticism which is employed in the study of the forces of nature, and the study of redistribution of matter and movement, permitted that the progress of science, in continual contact with the external world, should operate in the organization of all the arts of life the most rapid and fruitful revolution.

Everywhere science becomes the patrimony of humanity; agriculture, industry, and commerce transformed themselves, obeying its utile mandates.

Amazonia, in the age of great industries, could not escape the manifold benefits of science. Country, admired by the scientists, in a few years it became a vast market, open to human activity. Labor, capital, credit, conveyance, exchange, and speculation, all obeyed science, interposing in the production of wealth. Electricity, steam navigation, liberty, and law operated the acceleration of this grand social and economical transformation.

All under the dominion of science is transformed in this majestic valley. Labor multiplies its forces without end!

See here the thousand forms of machinery employed for the benefit of man! See here the infinity of forces hitherto unemployed, which, by miracle, have become useful! The railway here comes to explore the wealth of buried centuries. The locomotive brings with it regularity, frequency, rapidity, and low freights. From Belem to Bragança, it extends its giant arms! Three hundred kilometres of the road are already authorized to be laid, seventy-five being in operation, and the locomotive goes onward gaily announcing the good, the progress, the civilization, in one more centre of triumph for engineering!

Electricity, that mysterious link which unites sky and earth, and fraternizes humanity; that marvellous force which

seizes the lightning from the very clouds, and that transmits human word and human will across space almost as simply as thought, has already united in this universal embrace Amazonia with Europe and America.

And while the human voice glides in sonorous undulations over the delicate threads of the telephone, which now serves the most important city of Amazonia, the telegraph, commercial agent of incalculable value, establishes international relations of commerce between all the civilized outside world and Amazonia.

Blessings on the steamers which traverse the solitary wilds of the Amazon !

Applauded be the law of 1850 !

" When it is remembered," says Tavares Bastos, " in olden times before the opening of steam navigation, that it took one month to descend to Pará from Manáos, and to return a still longer time ; when we consider that to-day this can be done in less than a week ; that at Pará touch every month the steamers of the North-American line, which unite the valley of the Amazon to the markets of the United States, and other lines from Liverpool, which put it in direct communication with the ports of England and Europe ; when we consider that a letter can go in sixteen days from Manáos to New York, then we can certainly think with delight on the magnificent future which these new means of communication reserve for Amazonia."

Really the steamer is the true means of locomotion in the great river and its tributaries. The marvellous American invention encountered in the Amazon the proper and economical means for its great development. Transportation there is made under the rule of free competition. Freights vary according to the nature of the merchandise, the importance of the cargo, and navigable conditions which make the tariffs just and reasonable. Forty-two steamers of 52,000 tons are employed in the navigation of the outside harbor. Seventy-two steamers, with 20,000 tons, besides innumerable sailing vessels, are employed in the coasting trade. The vast Amazon River and its tributaries have the enormous exten-



sion of 80,000 navigable kilometres. The annual movement of its transports is calculated in millions of kilometres.

The steamer makes in this way an absolute revolution. In 1867 the law of the free navigation of the Amazon was passed. Later on the emancipation of slavery continued the work of civilization. The steamer was the forerunner of the great public freedom of Amazonia !

Commerce in the Amazonian valley has exceeded in rapidity all commercial development hitherto seen. In a few years it has surpassed many older foreign markets. In Brazil no other state has reached it in its progressive development. Labor in Amazonia brings abundant harvests. The profit of capital and of commerce, extremely well remunerated, is valued from the exportation which, being in Brazil 45 francs per inhabitant, raised it in the United States to 100 francs, and in the Amazon to 150 francs.

Rubber is the principal product of exportation ; its superiority, in comparison with that of other countries, is confirmed by the statistics of England and of the United States of America ; for the inferior rubber of Pará, denominated *ser-namby*, fluctuates in those markets at an equal price with superior rubber of other countries. The totality, so to speak, of the commercial transactions of *gomma elastica* made of this rich product one unparalleled market.

Its trade was sufficient to give independent life to Amazonia.

By excellence of the soil, of gums, of resins, of fibres, oils, pharmaceutical products, of richest woods, Amazonia offers to labor the most lucrative results. The annual production of the forests left unemployed, is estimated at over 500,000 millions of francs.

The rubber in the year 1891 produced the large sum of 54,000:000\$000.

On economical subjects, statistics furnish exact conclusions. The official tables annexed demonstrate the rapid progression of commerce, which, year after year, increases by thousands of contos.<sup>1</sup> These tables constitute incontestable

<sup>1</sup> One conto of reis equals about \$500, at par rate.

proofs. Here you have them; examine them; convince yourselves.

This great Amazon valley once known and the prestige of science in modern civilization, easy it is to comprehend how material transformations have concurred to render social life more varied, more luxurious, and more free in the magnificent valley.

Progress drove far away the confusion and sorrows of the past.

Public administration uniformly maintains order. Police and justice are strong. Individual security is complete. Public right is respected. Social necessities grow and develop and unfold with new and varied resources.

Rich and beautiful Amazonia possesses that which will impress her ideas and her will on the face of the universe.

*"Progress," says H. Coudreau, "is indefinite; no race is its perpetual keeper. It is like a legacy, bequeathed by the race which disappears to the one which succeeds. Its course is onward; it has already moved westward towards Europe; it has already actually moved from Europe to America. Why should not centuries to come see upon the banks of the Amazon their most magnificent flourishing, as early centuries saw their manifestations upon the banks of the rivers of Egypt and India?"*

Always the same inquiry to preoccupy the investigations of the scientists!

It is the grand future which Humboldt prophesied for the Amazon, when, in the deep shade of the primeval forests, it could hardly comprehend the advantages of economical science, and having no intercourse with other people, did not either know the power of united wills, which is becoming a reality in proportion as its colossal riches multiply.

The history of Amazonian progress, and its rapid commercial development, should teach us to have confidence in the future! Certainly it will come; as civilization advances more quickly, more and more rapid becomes its march.

Let us, therefore, have confidence in the future of Amazonia.

*Direct Importation and Exportation and General Income of the State  
of Pard, Demonstrated in Five Years, from 1849 and  
1854 to 1884 and 1889.*

Years.	Importation.	Exportation.	Total.	Custom-House Income.
1849-1854.....	13,108:806\$000	13,223:774\$000	26,332:580\$000	4,368:527\$650
1854-1859.....	18,471:482\$000	18,958:768\$000	37,430:250\$000	6,070:074\$160
1859-1864.....	23,749:572\$000	27,261:044\$000	51,011:526\$000	8,205:291\$749
1864-1869.....	29,930:570\$000	42,814:651\$000	72,745:221\$000	12,599:110\$474
1869-1874.....	38,101:074\$000	63,090:086\$000	101,194:160\$000	21,245:591\$035
1874-1879.....	38,692:729\$000	70,009:955\$000	108,702:684\$000	17,825:895\$567
1879-1884.....	100,085:008\$640	160,733:710\$007	260,818:727\$647	46,262:926\$006
1884-1889.....	93,981:283\$130	166,246:832\$132	260,228:115\$262	44,210:765\$071
Total.....	356,123:524\$770	562,339:729\$139	918,463:263\$909	160,788:181\$712
Mean for every five years.....	44,512:940\$596	70,292:466\$142	114,807:907\$988	20,098:522\$714
1890 and 1891 ..	40,493:185\$846	97,776:715\$899	138,269:901\$745	19,016:709\$202

*Quantity and Value of Rubber Exported by the Custom-Houses of Pard  
and Amazon in the Years 1839-1840 to 1891.*

*Demonstration of the Increase by every Five Years.*

Years.	Kilogrammes.	Official Value.	INCREASE.	
			Kilogs.	Value.
1839-1844	1,445,760	701:860\$000	—	—
1844-1849	2,875,350	1,093:191\$000	1,429,590	391:331\$000
1849-1854	7,893,555	7,240:066\$000	5,018,205	6,146:875\$000
1854-1859	9,800,685	9,672:213\$000	1,907,130	2,432:147\$000
1859-1864	13,829,340	15,603:835\$000	4,028,655	5,931:622\$000
1864-1869	21,197,272	20,528:899\$000	7,367,932	13,925:064\$000
1869-1874	27,006,223	48,102:639\$000	5,608,951	18,574:740\$000
1874-1879	30,360,123	54,087:480\$000	2,353,900	5,984:850\$000
1879-1884	51,580,536	134,096:522\$994	21,229,413	80,009:033\$994
1884-1889	70,861,436	146,999:446\$166	19,721,900	12,902:923\$172
Total	236,859,280	447,126:161\$160	68,665,676	146,298:586\$166
1890 and 1891	32,347,168 ½	89,004:151\$958		
Total	269,206,448 ½	536,130:313\$118		

*Demonstrative Table of the Products Exported from the States of Amazon and Pará, in the Years of 1880 to 1891.*

Years.	RUBBER		CACAO		NUTS		OTHER PRODUCTS (¹)		QUANTITY.	TOTAL VALUE
	Kilogs.	Official Value.	Kilogs.	Official Value.	Hectoles.	Official Value.	Kilogs.	Official Value.		
1880	7,977,804	17,559,079.954	3,121,085	1,765,399.468	105,141	871,276.591	1,273,586	1,108,604.524	12,477,706	21,304,360.537
1881	8,427,428	20,148,578.986	5,404,957	3,177,199.329	127,368	699,163.357	1,569,436	1,422,304.155	15,529,189	25,447,245.727
1882	10,063,006	31,413,067.859	6,322,125	3,669,500.840	87,762	659,928.866	2,222,697	1,926,477.738	18,695,590	37,668,975.003
1883	10,297,727	33,551,058.762	5,128,148	3,271,500.188	46,502	479,773.380	1,747,215	1,750,788.285	17,219,592	39,053,720.615
1884	10,640,421	21,973,098.225	5,188,924	2,873,155.765	158,427	977,645.152	2,041,731	1,984,478.475	18,029,503	27,808,377.617
1885	12,479,769	27,417,440.018	3,257,843	2,497,698.395	56,304	534,180.655	1,456,728	1,520,865.042	17,250,644	31,970,184.980
1886	13,448,552	32,332,620.788	1,922,226	1,387,617.335	58,758	561,815.658	1,305,843	791,331.643	16,795,379	35,073,385.424
1887	14,110,406	32,941,748.503	4,226,657	2,459,602.579	99,070	845,604.927	1,105,402	632,885.813	19,541,535	36,879,841.612
1888	15,013,673	27,646,240.377	7,539,096	3,308,306.351	165,505	1,125,490.208	1,354,736	515,577.131	24,073,010	32,595,614.567
1889	15,809,936	26,661,396.480	4,432,103	1,745,066.292	128,149	708,360.597	1,462,436	612,973.627	21,831,724	29,727,805.996
1890	15,456,280	35,003,646.407	3,016,800	1,348,534.762	25,799	294,890.632	1,154,090	666,450.333	19,651,970	37,313,530.134
1891	16,891,888	54,000,505.851	6,079,469	3,466,221.669	237,319	1,861,237.643	1,743,330	1,135,220.902	24,952,070	60,463,185.765
1900	150,615,080	360,649,081.610	55,699,433	30,969,803.343	1,296,105	9,619,384.666	18,497,231	14,067,957.908	226,047,850	415,306,227.527

¹ The other products are : cattle-hide and deer-hide, Chilian hats, cloves, tonka-beans, copaiba, tow, fish glue, guaraná, ivory, piassava, puxiry, quina, sarsaparilla, ucuuba, and urucú. The state of Amazon is feebly represented in this table.

## AGRICULTURE.

BETWEEN the Cordilheiras of the Guianas and the high Orinoco to the north, and the Cordilheiras of Goyaz, Matto-Grosso, and the first slopes of the northeastern Andes of Bolivia to the south, the immense valley of Brazilian Amazonia unfolds itself, more than four hundred leagues wide, open to the east and west to the trade winds and those from the Andes that constantly refresh it, and for more than five hundred leagues of its course longitudinally washed by the greatest river of the world. From the steep slopes on both sides of the rocky summits of the Cordilheiras descend from auriferous plateaux, crossing a wild region of large forests and plains, the Jary, the Parú, the Trombetas, the bluish Nhamundá, the Negro, the Tapajós, the Xingú, the Araguaya, and the Tocantins, immense rivers of more than three hundred leagues of extent, celebrated for the beauty of their cataracts and the opulence of their valleys.

To the west, from the central depression of South America and high valleys of New Granada, Ecuador, Bolivia, and Perú, whence the civilized Incas extracted the metals and costly gems which decorated their temples, flow the Içá, the Javary, the Jurúa, the Teffé, the Jutahy, the Japurá, and the Madeira, of no less mighty waters or less rich valleys. To the east the chains of mountains which, starting from Goyaz, go descending towards Maranham, close the space on that side. Of a mild climate, an alluvial and fertile soil, the most luxuriant vegetation is here developed. On the summits and sides of mountains, in the valleys, on the plains, crowding one another, interweaving, struggling for life, representatives of all vegetable families gather together in the most beautiful and opulent forests.

Strong essences, resins, the finest oils, textile substances, the sweetest perfumes of delicate and subtle odor, enormous varieties of hard woods suitable to the most beautiful and elegant workmanship, are to be found in incredible profusion in that prodigal valley.

A vast fluvial network of more than 80,000 navigable kilometres, emptying in the ocean daily 43,000 millions of cubic feet of water, washes these forests and acts upon the soil, which, by its topographical disposition and by the action of the hydrological phenomena, presents three different aspects: that of low lands annually overflowed; that of high lands, exempt from inundations; and maritime, influenced only by the law of the vast fluvial system. The valley can, therefore, be considered as forming three distinct regions.

Periodically fertilized by the humus which the waters carry from the forests, the regions of the low lands may be termed the lake regions, the region of *igapós*, *igarapés*, bores, and paranás of gentle course, of the Victoria regia, of heveas, of gramineas, of rich and immense pastures and cereals, and, at the spots where inundation is less felt, abound cacáo and guaraná.

It is the fertile Gessen of the future!

Characterized by the *Bertholletia excelsa*, by the *Bignonia cœrulea* the high land is the region of forests and *campos*. Dense forests, bare rocks, now flat, now broken lands, magnificent extensions of rivers, falls, cataracts, gay prairies dotted with oases of high trees and cut by the most crystalline *igarapés*, constitute its picturesque physiognomy. Here are coffee, tobacco, mandioca, cotton, and on the prairies is the most splendid cattle-farming region of Amazonia.

Belonging to the same geological formation, and influenced by the Amazonian climatology, in many points the maritime region diverges little from the preceding. Separated, however, from the vast fluvial net by the direct action of the sea, the climate, the briny breezes of the ocean, and the substitution of its daily tides by the annual floods of the great river, modifying the nature, extension, and intensity of hydrological phenomena give it a special feature. With sandy shores, immense shallows, which alternate on its borders, it is the land of *myrtus brazilianus*, *psidium*s, *cestrum*, *anarcadium occid.*, *rhizophora mangle*, and all this very special vegetation peculiar to the Brazilian coast from the tropics to the extreme

north. Widely varied in different regions, all species peculiar to Amazonian and intertropical Brazil are to be found therein.

Different gradations, establishing transitions among the three regions, mingle, thus forming the best of soils appropriated to all kinds of cultivation. Rich in climate and raw material, of colossal productiveness, near Europe, Africa, the Pacific, and North America, served by an immense fluvial communication, exceptionally endowed, Amazonia is destined to become the storehouse of the world!

As every phenomenon, however, the economical evolution of its population obeys inflexible laws, and these, affirming the future effectiveness of a flourishing agriculture, have already laid solid bases, directing the activity of rural classes in the relationship of productions of alimental culture, and estimation of other very valuable and numberless products.

Following the lead of alimental culture, the one which presents the greatest development in Amazonia is that of mandioca (*Jatropha manihot* of Linne). Its enormous productiveness, the variety of species which needs no renewing, and the diversity of products extracted therefrom give it an enormous preference over other foods also cultivated in the great valley and whose united production is not equal to it. Cultivated throughout Brazil, it has likewise been adopted by German and Italian colonies in the south of the Union. The same influence of soil has acted upon the preference of varieties of banana—*Musa paradisiaca*—over other nourishing fruits. The *popunha*—*Guillemia speciosa*, the *mamãoeiro*—*Carica papaya*, the alligator pear-tree—*Persea gratissima*, and the pineapple,—*Bromelia pyramidalis*, which almost compete with them in actual agricultural conditions, are commonly mingled with them in plantations, where less frequently are found the *abieiro*—*Achras caimito*, Mart., the *sapotas*—*Achras sapota*, L., the *sorveira* *Collophora utilis*, and the *araticús*—*Ananas*, and other similar fruits.

The same fact is yet to be verified in other agricultural branches.

Coffee, formerly a product of the Amazonian exportation,

was already flourishing in Vigia, Lamalonga, Moreira, Moura, Itacoatiara, Parintins, Barcellos, and other points. Of excellent quality, giving one kilogram and a half per tree, coffee planted under shade has long duration and its culture is not fatiguing. Harvests lately gathered in abandoned coffee plantations prove the extreme adaptiveness of the soil and climate to the precious rubiaceae.

Sugar-cane, whose development is superb, both in low and high lands, is cultivated in more than 150 agricultural establishments, its mean production being over 80,000 kilograms per hectare. Like coffee, however, it needs more perfect processes, without which its culture will become paralyzed, being now reduced for almost simple alcoholic uses.

Cotton, of the variety *g. vitifolium*, is cultivated here almost exclusively for private consumption, and shows great productiveness, the trees more than once during the year becoming white with fibres.

The culture of cacáo, the delicious *theobroma*, of which more than six varieties are known, increases in an extraordinary manner.

The delicacy of taste of Amazonian cacáo is unsurpassed in any part, and claims the great attention of the culturist. Formerly obtained through principally extractive industry, the superiority of price of the cultivated encouraged the first regular plantations, which progressively increase.

The cultivation of this is as easy as lucrative, and is becoming more and more widely extended, as in Obidos, Santarem, Monte-Alegre, Alemquer, Parintins, Maués, Cametá, and several other places. Furnishing a nourishing, and very delicious drink, the use of which extends daily, cacáo has become one of the most largely exported products of the Amazonia.

Tobacco, as an article of trade, has generally had a great impulse. In Rio de Janeiro, supplied by the best markets of Minas, Goyaz, S. Paulo, and Bahia, the Pará tobacco is quoted the highest price, its cost being 20\$000 per kilogram, a sum which indicates its unexcelled quality. Irituia, Bragança, and the rivers Trombetas, Guamá, Acará, and Urariá, are the principal producing centres of the victorious solanea.



Admirable has been the propagation of guaraná—*Paullinia sorbilis*. Obtained from the industrious agriculture of the tribes Mundurucús, Maués, and Apiacás, from the Tapajós River, its use rapidly spread in Amazonia, Matto-Grosso, and Bolivia, these last regions being its principal markets, chosen specimens obtaining therein really fabulous prices.

For Europe, North America, and the Atlantic, its search constantly increases; its exportation has also augmented, during the last years being estimated at 32,000 kilos.

Principally cultivated in Maués, Juruty, and the rivers Tapajós, Madeira, and Purús, a refreshing drink is prepared from it, rich in caffeine.

Following guaraná, the cultivation of a very new product now commences, although long in use by the Ticunas and Omáguas of Japurá, the ypadú—*erythroxylum coca*, Lamk.—an aromatic and delicious tonic, cultivated for private use on several plantations of the Amazon, and already known in Matto-Grosso. Martius, Tschudi, and Wallis quote its admirable effects, and by the excellence of its qualities, propose its use as a habitual drink.

Existing in all the great valley, and demanding no care, urucú—*bixa orellana*—is almost classified among extractive products. Its production, as seen from the exportation, is a somewhat varying one.

A very easy improvement, removing exclusively the coloring part and diminishing the work which the present manipulation exacts, would bring with the superiority of the commercial article an elevation in its price and increase of its production. The former cultivation of indigo and saffron has disappeared, the profit arising therefrom not being adequate to the expense of labor expended.

Allied to agriculture, among all Arian people, the cattle-raising industry commences to develop itself in a notable manner in the fine campos of the high river Branco, Teffé, Olivença, Tapajós, Obidos, Alemquer, Monte-Alegre, Aiqui, besides the large island of Marajó, which supplies the market of Pará. For want of minute statistics, the pastoral riches of the valley cannot be estimated; it is supposed,

however, that they are not inferior to 600,000 head of cattle and 25,000 horses.

Overflowing are the fountains of the extractive industry of Amazonia !

Withal, the most remunerative of its industries is that of rubber, whose applications daily increase, and with them the search and importance of the precious article. All countries seem to vie in the exploration of this product. In Africa, Senegal, Sudan, Guiné, Liberia, Niger, Angola, Mozambique, and Zanzibar are extracted varieties of an apocynæa—*landolphia*, and of a liana—*vahea*; in Asia, of different *ficus*, of the *urceola esculenta*, of *calotropis gigantea*, of *chavanezia esculenta*, and of *conanchem ovalifolium*; in Oceania, in Sumatra, Java, Bornéo, Sonda, from the varieties of *ficus*, *urceola elastica*, *willughbeia firma*, *dyera cortulata*, and *calotropis gigantea*; in America, Mexico, Honduras, San Salvador, Guatemala, and the occidental Andes, from *castilloa elastica*; in Paraguay, and some parts of Perú, Ecuador, Pernambuco, Maranhão, Bahia, Minas, from the varieties of an apocynæa—*hancornia*, and in Ceará from *manihot glaziovii*. The *ficus gameleira* in Minas, and the *cameraria latifolia* in Perú, are explored for the same purpose.

In all the Amazon valley, as in the high Orenoco, the heveas—*h. discolor*, *h. guyanensis* Aubl., or *syphonia elastica* Pers., *h. pauci-flora*, *h. benthamiana*, *h. lutea*, *h. rigidifolia*, *h. apiculata*, and other varieties, the producers of this precious gum, whose immense superiority over similar ones, proven in repeated experiments, has caused the different trials of its acclimation in European possessions and in Asia.

In realty, Amazonian rubber is of less specific gravity; it suffers less loss in drying for manufacturing purposes, presenting in its preparation the following relation over similar rubber:

Pará . . . 12 %	Gambia . . 24 %	Madagascar 28 %
Loanda 1st 17 %	Sernamby . 25 %	Assam . . 28 %
Colombia . 20 %	Ceará . . 28 %	Gabon . . 35 %
Java . . . 22 %	Africa . . 28 %	Bornéo . . 35 %

In the same manner the quantitative analysis of the milk of *hevea* gives in relation to that of *ficus* the following results:

<i>Hevea Braz.</i>		<i>Ficus elastic.</i>	
Gauchú . . .	31.70	Gauchú . . .	9.57
Water . . .	56.37	Water . . .	82.30
Other substances,	11.93	Other substances,	8.13
<hr/>		<hr/>	
100.00		100.00	

Besides these qualities, it is yet by its elasticity that the *hevea* gum is superior to its similar.

Always progressively increasing, the development of the exploration of this most important commercial product of the Amazonia can be deduced by the following ciphers of its exportation :

1840 . . . . .	380,160 kilos.
1844 . . . . .	374,970 "
1848 . . . . .	773,200 "
1852 . . . . .	1,633,000 "
1856 . . . . .	1,665,000 "
1860 . . . . .	2,463,000 "
1864 . . . . .	3,413,600 "
1868 . . . . .	4,661,200 "
1872 . . . . .	5,256,400 "
1876 . . . . .	6,175,900 "
1880 . . . . .	10,300,000 "
1884 . . . . .	10,640,000 "
1888 . . . . .	15,014,000 "
1891 . . . . .	16,892,000 "

Doubling every ten years, nothing indicates, however, that it has yet attained the height of its production. Running to the central depression, whose waters offer a freer and surer navigation, almost all explorers have deviated from the high valleys of the Araguaya, Tapajós, and Xingú, from the rivers that run from the north, and from many branches of the Madeira, filled with cataracts, leaving for tens of leagues intact, or almost so, vast rubber-tree forests, from which relatively only a small part is frequented.

On the other hand, belonging to-day to the enormous majority of those which are in active exploration, the same

interest which formerly impelled the occasional occupants, who disputed their possession, to take the greatest immediate possible profit, exhausting the trees by a barbarous bleeding, at present obliges their proprietors to care better for them, looking rather for the continuous and lasting income to be derived from them. The trees are then better cared for and the new growing ones are watched with interest.

The existence of those large rubber-tree forests, the sensible method now adopted in their treatment, and the appropriation of the *way* to the spontaneous development of the heveas make us believe, that the quantity of the production of rubber for a long time will depend on two factors, viz., the search of the material and the labor question.

In the tables of exportation of extracting industry, castanha nuts figure next. An almond of an enormous lecythidea,—*bertholletia excelsa*—supplies a very fine and abundant oil, perhaps without rival in lubricating machines, and its alimental mass is used for culinary purposes and in confectionery.

Less abundant are the sapucaya nuts—*Lecythis ollaria*, *L.*, from which are exported oily and nutritious nuts, similar to those of the castanha, but of more agreeable taste. From the bark of both, a tow is prepared, useful for calking. The wood is employed in naval constructions.

A small bean of the *dipterix odorata*, tonka-bean, also constitutes an important extracting product, the procuring of which daily increases. It is used in perfumery and tobacco, to which it gives an appreciated odor and taste. Its very aromatic oil is used in Brazil, like its almonds to preserve any object from insects. Its wood is used in joinery and civil constructions.

Another extractive product, the puxuri, is the colytedone of two laurineas, very common in the valley of the River Negro, the *nectandra puchury major* and the *nect. puch. minor*. More delicate than the larger, in odor and in savour, is the smaller variety; they are both applied in stomachic affections, and their aromatic oil volatilizes with the greatest facility.

Their wood has not yet been employed ; it must, however, be as good as other nectandras in civil constructions.

Vanilla—*vanilla aromatica*—sarsaparilla, and japecanga—*smylax*, precious bark—*cryptocaria pretiosa*, Mart., the abutua,—*cocculus dichroa*, Mart., the copahyba—*copahypheras officinalis*, form a part of the extractive products of exportation to foreign countries. Innumerable, however, are those which the Brazilian therapeutics obtain from this valley : amongst others, the caferana—*tachia guyanensis*, a powerful antifebrile ; the acapú—*andira Aubletii*, the cunami—*phyllanthus cunami*, and the caapiá—*dorstenia multiformis*, Milq., anodynes ; the caraná—*anyris carana* or *thrithrinax* ?, the jutahy—*hymenæa curbaril*, the maracujá, assú—*passiflora alata*, the apihy, *hydrocotyle umbelata*, used in the affections of the respiratory organs ; the amapá, *mapuria guyanensis*, the anani—*simphonia globulifera*—Lima Filho, employed in cancerous wounds and pains ; the mucunã—*mucuna urens*, and cipó guirá—*bygonia guira*, drastics ; the manacá—*francisca uniflora*, a powerful antisyphilitic ; the jambu-assú—*epilantus oleracia*—an anti-escorbutic and anti-asthmatic ; the symaruba—*simaruba officinalis*, powerful against chronic intestinal affections ; besides many others, which, recently obtained from the Indians and not yet scientifically studied, are nevertheless employed by popular therapeutics, such as the ararani, very powerful against dropsy ; the assupá, a violent antifebrile ; and the barimbé, of extraordinary effect upon the nervous and cerebral systems.

Very fine oils are furnished by the extractive industry and their enumeration would be endless. Besides those already quoted we will notice that of cacáo, utilized in medical preparations ; that of andiroba—*carapa guyanensis*, yellow in color, and extremely bitter, excellent for illumination, also medicinal ; that of jupaty—*sagus tædigera*, a fixed red, bitter, also medicinal and used for illumination ; that of jacaré copahyba—*calaphyllum brasiliensis*, a fixed dark-green, preferred for calking ; that of pataúá—*ænocarpus pataua* Mart., fixed, without odor, light-yellow, transparent, used for culinary purposes ; as well as assahy—*euterpe oleracia*, and that

of bacaba—*ænocarpus bacaba*, the former fixed dark-green and slightly bitter, and the second light-green and of an agreeable savour. Aromatic are those of vanilla—*vanilla aromatica*, dark red; cloves—*persea caryophyllata*, red; sassafras—*nectandra cymbarum*, bright yellow; balm—*myrospermum erythroxylum*, red; umiry—*umirium balsamiferum*, white, transparent, and so abundant that it falls from the tree by itself; with different properties that of rubber (*hevea brasiliensis*; of ucuúba—*myristica off.*; of macucú—*ilex macucua*; of miritys—*maurítias*; and of the two *astrocaryum*, the tucum and the tucumã.

Not less magnificent is the wealth of textile fibres. In palm trees, the tucum—*astrocaryum vulgare*; the jauary—*astrocaryum jauary*; the macaúba—*acrocomia spherocarpa*; the maurítias—*flexuosa* and *aculeata*, produce fibres of admirable fineness, resistance, and brilliancy. From the inajá—*maximitiana regia*, from burity—*maurítia vinifera*, from marajá—*bactris*, from mucajá—*acrocomia læsospatha*, from tucumã—*astrocaryum tucuman*, other fibres are extracted for hats, baskets, ropes, and various other industries. The piassava—*attalea funifera*, and the patauí—*ænocarpus pataud*, Mart, furnish the strongest ropes for the navy.

In bromelias, numerous species of the kind *ananassa* and *bilbergia*, known under the general name of gravatás, or crauatás, furnish, as does the *agave pita*, fibres of extreme whiteness, resistance, and delicacy.

In malvaceas, urticaceas, amomas, and leguminosas, in the same way can be found an equal abundance of textile material appropriated to all purposes; the mucanã,—*mucunã urens*, the ambira—*xylopia cerica*, the muroró,—*bauhinia*, the embaúba—*cecropia*, produce very strong fibres for ropes; the uaixyma—*urema lobata*, and the urucú,—*bixa orellana*, give fibres for tissues and also for ropes; the araticú—*corticea anomala palustris*, the cocoa-nut tree—*cocos nucifera*, the imbé—*arum epiphytes*, the jaitára—*desmonchus macracanthus*, the malvarisco—*spheralia cispt*, the tauary—*lecythis bignonia*, and many others, present the greatest variety of useful fibres for many industries.

Silky, satin-like, and of an exceeding tenuity and beauty are the cottons which involve the seeds of the capsular fruits of monguba and sumauma—*bombax munguba*, Mart; and *eriodendron sumauma*. Raw material of great abundance, and already utilized in Brazil for the manufacture of costly threads and twists, it contains the invaluable succedaneum of beaver for velvety and luxurious felts.

Endless would be the enumeration of the woods that can be found in the forests of Amazonia, of which the collections made can give no idea of the simultaneous existence of so many varied and precious species, the fineness, beauty, and satin-like texture, the hardness, resistance, and multiple applications to which they can be used.

Independent of the statistics of the direct commerce of the market of Manáos, from those of the intermunicipal commerce of the two states in local consumption, etc., the part of the Amazonian production entered in 1891 in the market of Pará was the following :

## RURAL INDUSTRY.

Mandioca . . . . .	14,519,960 litres
Cacáo . . . . .	4,476,233 kilogrs.
Cane alcohol . . . . .	1,319,642 litres
Tobacco . . . . .	299,917 kilogrs.
Rice . . . . .	456,720 "
Beans . . . . .	280,440 "
Corn . . . . .	178,720 litres
Molasses . . . . .	95,715 "
Guaraná . . . . .	34,522 kilogrs.
Coffee . . . . .	1,757 "
Gergelim . . . . .	720 "
Cotton . . . . .	200 "

## FARMING INDUSTRY

Cattle . . . . .	16,143 heads.
Horses . . . . .	357 "
Hogs . . . . .	1,251 "
Poultry . . . . .	42,480 "
Cattle hides . . . . .	22,500 "

## EXTRACTIVE INDUSTRY OF VEGETABLE PRODUCTS.

Rubber . . . . .	13,623,690 klgm.
Nuts . . . . .	5,466,800 litres.
Oils of copahyba, umiry, etc., etc.	65,070 "
Cumarú (tonka-beans) . . . .	34,685 klgm.
Sarsaparilla, pitch, vanilla, etc.	2,500 klgm.

Pirarucù (a sort of codfish), mixira, turtle, and many others are not noted.

As in former times in America, according to the necessities imposed by several degrees of social advancement, several natural products were submitted to culture, so also the social needs of the present day go on creating in Amazonia a new agriculture.

Still in its primitive period of evolution, scarcely beginning to form, or to take from extractive industry its component elements, its opulent promises may already be appreciated from the comparison of the commercial tables.

Herewith are given the ciphers, relative to the time of old cultures, to the date in which, with the steam navigation, the economical conditions of the great valley were profoundly modified, and up to the present date:

YEARS.	VALUE OF EXPORTATION.
1819	452:716\$000
1827	488:254\$000
Annual mean of 1849-1854	2,644:755\$000
1880	21,304:361\$000
1881	25,447:246\$000
1890	37,313:530\$000
1891	60,463:186\$000

Through the movement that has been effected several methods were resolved upon to still further its acceleration: The Emissor Bank of the North being established with the aim of aiding rural explorations; the land laws were decreed classifying the unoccupied lands of the two states, and rendering their acquisition easy; a wagon-road connecting the capital of the Amazon, with the *campos* of the high Rio Branco has been opened; another at Alemquer has



been commenced; this will extend to the northern *campos* country, at present 50 kilometres. The plans for a branch of the Bragança R.R. to Salinas have been ordered and made; this will connect the capital of Pará with the very rich agricultural valleys of the East. In Marapanim the preliminary works for the foundation of a model colony, destined for European immigration, have been executed; and the construction of a wagon-road, that connects it with the Pará R.R. and with river navigation has also been initiated; the foundation of an agricultural school and the opening of an Exposition of Amazonian products have also been resolved.

Another measure, as fruitful as are these, was voted by Congress of the state of Pará: the construction of a railroad to the state of Matto-Grosso.

Upon consideration of the value of these measures, the progress revealed in the statistics, the excellence of the climate, the natural wealth, astonishing to all who visit this valley, the comparative conditions of life in different countries, have occasioned the spontaneous words of one of the most distinguished sons of this happy region, quoted by Alfred Marc:

"Amazonia," says the Baron of Marajó, "is a new world, which will open before the close of the century. While in Europe the area of cultivated lands is narrow, life itself hedged round with growing difficulties, misery clamoring loudly for emigration, Amazonia offers lands of untold wealth; a marvellous facility for transport and communication; two annual harvests to the greater part of culturists, and a climate whose mildness exempts the workman from the expenditure and precaution necessary against the rigors of winter."

These words contain the solution of the social problems, which agitate Europe; *they* are the programme of the future of Amazonia!

NOV 22 1916

**NOTE.**

The figures on pages 102-108 refer to the total productions of the state of Pará, entered in the market of Belém; and those on page 149, to those of Amazonia in general, entered in the same market, from those of internal consumption, the re-exportations for the interior being deducted.















